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=> d his

     (FILE 'HOME' ENTERED AT 16:13:09 ON 19 MAY 2006)

     FILE 'REGISTRY' ENTERED AT 16:13:36 ON 19 MAY 2006
L1          309 S SN/ELS (L) 1/ELC.SUB
L2          183 S (CO (L) SN)/ELS (L) 2/ELC.SUB
L4           37 S (C(L)SN)/ELS (L) 2/ELC.SUB
L5           66 S (C (L) CO (L) SN)/ELS (L) 3/ELC.SUB
L6          694 S (CU(L) SN)/ELS (L) 2/ELC.SUB
L7           76 S (C (L) CU (L) SN)/ELS (L) 3/ELC.SUB

     FILE 'HCAPLUS' ENTERED AT 16:24:20 ON 19 MAY 2006
L8       103068 S L1
L9          505 S L2
L10          81 S L4
L11          11 S L5
L12        5781 S L6
L13          87 S L7
L14         596 S L8 (L) ANOD? (L) BATTER?
L15          30 S L14 (L) PARTICLE#
L16          30 S L15 AND ELECTROCHEMICAL?/SC,SX
L17          48 S L9 (L) ANOD?
L18          44 S L17 (L)(BATTER? OR CELL#)
L19          44 S L18 AND ELECTROCHEMICAL?/SC,SX
L20           8 S L10 (L) (ELECTROD? OR ANOD?)
L21           5 S L20 AND (BATTER? OR CELL#)
L22           5 S L21 AND ELECTROCHEMICAL?/SC,SX
L23          16 S L10 AND (ELECTROD? OR ANOD?)
L24           7 S L23 AND (BATTER? OR CELL#)
L25           7 S L24 AND ELECTROCHEMICAL?/SC,SX
L26           9 S L11 AND (ELECTROD? OR ANOD?)
L27           9 S L26 AND (BATTER? OR CELL#)
L28           8 S L27 AND ELECTROCHEMICAL?/SC,SX
L29         109 S L12 (L) ANOD? (L) BATTER?
L30           8 S L29 (L) PARTICLE#
L31          22 S L29 AND PARTICLE#
L32           8 S L30 AND ELECTROCHEMICAL?/SC,SX
L33          22 S L31 AND ELECTROCHEMICAL?/SC,SX
L34           5 S L13 AND (ANOD? OR ELECTROD?)
L35           4 S L34 AND (BATTER? OR CELL#)
L36           4 S L35 AND ELECTROCHEMICAL?/SC,SX
L37          19 S L20 OR L21 OR L26 OR L27 OR L34 OR L35
L38          16 S L37 AND (1907-2003)/PRY,AY,PY
L39          88 S L16 OR L19 OR L30 OR L31
L40          74 S L39 AND (1907-2003)/PRY,AY,PY
L41          71 S L40 NOT L38

=> file reg
FILE 'REGISTRY' ENTERED AT 17:36:18 ON 19 MAY 2006
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=> d l38 que stat
L4           37 SEA FILE=REGISTRY ABB=ON  PLU=ON  (C(L)SN)/ELS (L)
                2/ELC.SUB
L5           66 SEA FILE=REGISTRY ABB=ON  PLU=ON  (C (L) CO (L) SN)/ELS
                (L) 3/ELC.SUB
L7           76 SEA FILE=REGISTRY ABB=ON  PLU=ON  (C (L) CU (L) SN)/ELS
                (L) 3/ELC.SUB
L10          81 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L4
L11          11 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L5
L13          87 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L7
L20           8 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L10 (L) (ELECTROD? OR
```

```
                ANOD?)
L21             5 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L20 AND (BATTER? OR
                CELL#)
L26             9 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L11 AND (ELECTROD? OR
                ANOD?)
L27             9 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L26 AND (BATTER? OR
                CELL#)
L34             5 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L13 AND (ANOD? OR
                ELECTROD?)
L35             4 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L34 AND (BATTER? OR
                CELL#)
L37            19 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L20 OR L21 OR L26 OR
                L27 OR L34 OR L35
L38            16 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L37 AND (1907-2003)/PRY,
                AY,PY


=> file hcaplus
FILE 'HCAPLUS' ENTERED AT 17:36:31 ON 19 MAY 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)


=> d l38 1-16 ibib abs hitstr hitind

L38  ANSWER 1 OF 16  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2004:1036054  HCAPLUS
DOCUMENT NUMBER:          141:426362
TITLE:                    Nonaqueous electrolyte lithium secondary
                          batteries
INVENTOR(S):              Endo, Takuya; Hatake, Shinji; Mizutani, Satoshi
PATENT ASSIGNEE(S):       Sony Corp., Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 16 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.        DATE
     ---------------      ----   --------    --------------------
     --------
     JP 2004342459         A2    20041202    JP 2003-137765
                                                                   200305
                                                                   15
                                                 <--
PRIORITY APPLN. INFO.:                       JP 2003-137765
                                                                   200305
                                                                   15
                                                 <--
AB   The battery consists of Li-intercalating cathode,
     Li-intercalating anode contg. ≥1 active materials
     selected from metals, alloys, or compds. which reacts with Li, and a
     nonaq. electrolyte contg. electrolyte salts, and is characterized by
     satisfying C2.8/C2.5 ≥0.95 or C2.6/C2.5 ≥0.98, where
     Cx indicates the closed-circuit discharge capacity of the
     battery directly after charging, by discharging to x V at
     0.2 C under 23°.  Preferably, the anode active
     materials contain Sn, Pb, Si, Ge, Al, and/or In and/or the cathode
     active materials contain Fe, Ni, Co, and/or Mn.  The
     batteries have durable charge-discharge cycle performance.
IT   796127-98-5P
     RL: DEV (Device component use); IMF (Industrial manufacture); PREP
     (Preparation); USES (Uses)
        (anode active material; nonaq. electrolyte lithium
```

secondary **batteries** with durable cycle characteristics)
RN 796127-98-5 HCAPLUS
CN Cobalt alloy, base, Co 50,Sn 40,C 10 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Co | 50 | 7440-48-4 |
| Sn | 40 | 7440-31-5 |
| C | 10 | 7440-44-0 |

IC ICM H01M010-40
ICS H01M004-02; H01M004-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST nonaq electrolyte lithium secondary **battery**
IT Secondary **batteries**
(lithium; nonaq. electrolyte lithium secondary **batteries** with durable cycle characteristics)
IT 108091-51-6P **796127-98-5P**
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(**anode** active material; nonaq. electrolyte lithium secondary **batteries** with durable cycle characteristics)
IT 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7440-21-3, Silicon, uses 7440-56-4, Germanium, uses 7440-74-6, Indium, uses
RL: DEV (Device component use); USES (Uses)
(**anode** active materials contg.; nonaq. electrolyte lithium secondary **batteries** with durable cycle characteristics)
IT 12190-79-3P, Cobalt lithium oxide (CoLiO2) 642999-49-3P, Aluminum cobalt lithium magnesium oxide
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(cathode active material; nonaq. electrolyte lithium secondary **batteries** with durable cycle characteristics)
IT 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses
RL: DEV (Device component use); USES (Uses)
(cathode active materials contg.; nonaq. electrolyte lithium secondary **batteries** with durable cycle characteristics)

L38 ANSWER 2 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:996462 HCAPLUS
DOCUMENT NUMBER: 141:426297
TITLE: **Anode**-active material and method for production thereof, and non-aqueous electrolyte secondary **cell** using the same
INVENTOR(S): Mizutani, Satoshi; Inoue, Hiroshi
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2004100293 | A1 | 20041118 | WO 2004-JP6473 | 200405 07 |

<--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,

KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL,
PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG

| | | | | |
|---|---|---|---|---|
| US 2005208378 | A1 | 20050922 | US 2004-519898 | 200412 22 |
| PRIORITY APPLN. INFO.: | | | JP 2003-131234 <-- | A 200305 09 |
| | | | WO 2004-JP6473 <-- | W 200405 07 |

AB The disclosed **anode**-active material comprises an alloy contg. elements M capable of alloying with lithium and at least one element R selected from the elements whose at. no. is ≤ 20 (exclusive of H, Li and a rare gas). The above elements M consist of Sn and ≥ 1 selected from Ni, Cu, Fe, Co, Mn, Zn, In and Ag, and the above element R is selected from B, C, Al, Si, P or S. The material preferably contains the element R 10-50 wt %. The incorporation of the element R allows the material to have a low cryst. or an amorphous structure, which results in the smooth entrance and exit of Li. The **anode**-active material has high discharge capacity and also is excellent in the rate of retention of the capacity thereof in charge-discharge cycles.

IT **794526-69-5P 794526-93-5P**
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(lithium secondary **battery anode** active substance for improved capacity)
RN 794526-69-5 HCAPLUS
CN Tin alloy, base, Sn 54,Cu 36,C 10 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 54 | 7440-31-5 |
| Cu | 36 | 7440-50-8 |
| C | 10 | 7440-44-0 |

RN 794526-93-5 HCAPLUS
CN Tin alloy, base, Sn 48,Co 32,C 20 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 48 | 7440-31-5 |
| Co | 32 | 7440-48-4 |
| C | 20 | 7440-44-0 |

IC ICM H01M004-58
ICS H01M004-02; H01M010-40; C22C013-00; B22F001-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium secondary **battery anode** active alloy
IT **Battery anodes**
(lithium ion **battery**; tin-contg. alloys as **anode**-active substances)
IT 146660-31-3P **794526-69-5P** 794526-70-8P

**794526-93-5P** 794527-07-4P 794527-09-6P 795309-11-4P
795309-12-5P 795309-13-6P 795309-14-7P 795309-15-8P
795309-16-9P 795309-17-0P 795309-18-1P 795309-19-2P
795309-20-5P 795309-21-6P 795309-22-7P 795309-23-8P
795309-24-9P 795309-25-0P 795309-26-1P 795309-27-2P
795309-28-3P 795309-29-4P 795309-30-7P 795309-31-8P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(lithium secondary **battery anode** active substance for improved capacity)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 3 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:996460 HCAPLUS
DOCUMENT NUMBER: 141:426296
TITLE: Negative **electrode** material, process for producing the same and **cell**
INVENTOR(S): Mizutani, Satoshi; Inoue, Hiroshi; Kita, Akinori; Nishino, Takatomo; Tanizaki, Hiroaki
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2004100291 | A1 | 20041118 | WO 2004-JP6477 | 200405 07 |
| | | | <-- | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| US 2005250008 | A1 | 20051110 | US 2005-520915 | 200501 07 |

| | | | |
|---|---|---|---|
| PRIORITY APPLN. INFO.: | JP 2003-131231 | A | 200305 09 |
| | <-- | | |
| | JP 2003-403656 | A | 200312 02 |
| | <-- | | |
| | WO 2004-JP6477 | W | 200405 07 |

AB A neg. **electrode** material capable of providing a high capacity while enhancing cyclic characteristics, a process for producing the same, and a **battery** are disclosed. The neg.

**electrode** material has a reaction phase including an element capable of producing an intermetallic compd. with Li, and C. Preferably, the reaction phase has the half width of diffraction peak by X-ray diffraction of not smaller than 0.5°. Furthermore, the neg. **electrode** material can preferably provide a peak of C in a region lower than 284.5 eV by XPS and the energy difference of peak between the 3d5/2 orbit of Sn and the 1s orbit of C is preferably larger than 200.1 eV when the neg. **electrode** material contains Sn as the element capable of producing an intermetallic compd. with Li. The element capable of producing an intermetallic compd. with Li can thereby be inhibited from aggregating or crystg. as charge/discharge occurs.

IT **794526-48-0 794526-52-6 794526-69-5**
**794526-71-9 794526-92-4 794526-93-5**
**794526-94-6 794526-97-9 794526-98-0**
**794526-99-1 794527-00-7 794527-01-8**
RL: TEM (Technical or engineered material use); USES (Uses)
(lithium secondary **battery anode** substance)

RN 794526-48-0 HCAPLUS
CN Tin alloy, base, Sn 60,Co 40,C 0.5 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 60 | 7440-31-5 |
| Co | 40 | 7440-48-4 |
| C | 0.5 | 7440-44-0 |

RN 794526-52-6 HCAPLUS
CN Tin alloy, base, Sn 44,Cu 36,C 20 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 44 | 7440-31-5 |
| Cu | 36 | 7440-50-8 |
| C | 20 | 7440-44-0 |

RN 794526-69-5 HCAPLUS
CN Tin alloy, base, Sn 54,Cu 36,C 10 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 54 | 7440-31-5 |
| Cu | 36 | 7440-50-8 |
| C | 10 | 7440-44-0 |

RN 794526-71-9 HCAPLUS
CN Tin alloy, base, Sn 54,Co 35,C 11 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 54 | 7440-31-5 |
| Co | 35 | 7440-48-4 |
| C | 11 | 7440-44-0 |

RN 794526-92-4 HCAPLUS
CN Tin alloy, base, Sn 51,Co 34,C 15 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 51 | 7440-31-5 |
| Co | 34 | 7440-48-4 |

| | | |
|---|---|---|
| C | 15 | 7440-44-0 |

RN 794526-93-5 HCAPLUS
CN Tin alloy, base, Sn 48,Co 32,C 20 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 48 | 7440-31-5 |
| Co | 32 | 7440-48-4 |
| C | 20 | 7440-44-0 |

RN 794526-94-6 HCAPLUS
CN Tin alloy, base, Sn 54,Co 36,C 10 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 54 | 7440-31-5 |
| Co | 36 | 7440-48-4 |
| C | 10 | 7440-44-0 |

RN 794526-97-9 HCAPLUS
CN Tin alloy, base, Sn 59,Co 39,C 2 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 59 | 7440-31-5 |
| Co | 39 | 7440-48-4 |
| C | 2 | 7440-44-0 |

RN 794526-98-0 HCAPLUS
CN Tin alloy, base, Sn 57,Co 38,C 5 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 57 | 7440-31-5 |
| Co | 38 | 7440-48-4 |
| C | 5 | 7440-44-0 |

RN 794526-99-1 HCAPLUS
CN Tin alloy, base, Sn 45,Co 30,C 25 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 45 | 7440-31-5 |
| Co | 30 | 7440-48-4 |
| C | 25 | 7440-44-0 |

RN 794527-00-7 HCAPLUS
CN Carbon alloy, base, C 40,Sn 36,Co 24 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| C | 40 | 7440-44-0 |
| Sn | 36 | 7440-31-5 |
| Co | 24 | 7440-48-4 |

RN 794527-01-8 HCAPLUS
CN Carbon alloy, base, C 50,Sn 30,Co 20 (9CI) (CA INDEX NAME)

| Component | Component | Component |
|---|---|---|

| | Percent | Registry Number |
|---|---|---|
| C | 50 | 7440-44-0 |
| Sn | 30 | 7440-31-5 |
| Co | 20 | 7440-48-4 |

IC ICM H01M004-38
ICS H01M004-02; H01M010-40; C22C013-00; B22F001-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium secondary **battery anode** substance metal carbon alloy
IT **Battery anodes**
(lithium ion **battery**; carbon contg. alloys capable of forming intermetallic compd. with lithium as)
IT **794526-48-0** 794526-49-1 794526-51-5 **794526-52-6**
794526-53-7 794526-54-8 794526-55-9 794526-56-0 794526-57-1
794526-58-2 794526-59-3 794526-60-6 794526-61-7 794526-62-8
794526-63-9 794526-64-0 794526-65-1 794526-66-2 794526-67-3
794526-68-4 **794526-69-5** 794526-70-8 **794526-71-9**
794526-73-1 794526-75-3 794526-77-5 794526-79-7 794526-80-0
794526-81-1 794526-82-2 794526-83-3 794526-84-4 794526-85-5
794526-86-6 794526-87-7 794526-88-8 794526-89-9 794526-90-2
794526-91-3 **794526-92-4 794526-93-5**
**794526-94-6** 794526-95-7 794526-96-8 **794526-97-9**
**794526-98-0 794526-99-1 794527-00-7**
**794527-01-8** 794527-02-9 794527-03-0 794527-04-1
794527-05-2 794527-06-3 794527-07-4 794527-08-5 794527-09-6
794527-10-9 794527-11-0 794527-12-1 794527-13-2
RL: TEM (Technical or engineered material use); USES (Uses)
(lithium secondary **battery anode** substance)
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:632493 HCAPLUS
DOCUMENT NUMBER: 141:176834
TITLE: Material for secondary lithium **battery anode** and its manufacture
INVENTOR(S): Hara, Toshihisa
PATENT ASSIGNEE(S): Kobe Steel, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004220871 | A2 | 20040805 | JP 2003-5145 | 200301 10 <-- |

PRIORITY APPLN. INFO.: JP 2003-5145 200301 10 <--

AB The title material has a surface plating layer, comprising successively a Ni layer, a Cu-Sn alloy layer, and a Sn layer, on a Cu (alloy) contg. base material; where the Cu-Sn alloy layer consists of a η layer (Cu6Sn5) with a thickness of 5-100 μm. The title material is manufd. by forming the Ni plating layer on the base material; repeatedly forming successive layers of the Cu plating layer and the Sn plating layer ≥1 times; and heat

treating to form the η layer (Cu6Sn5) contg. Cu-Sn alloy layer.

IT **587840-11-7**
RL: TEM (Technical or engineered material use); USES (Uses)
(compns. and manuf. of **anode** materials contg. Cu-Sn plated Cu or Cu alloys for secondary lithium **batteries**)

RN 587840-11-7 HCAPLUS
CN Carbon alloy, nonbase, C,Cu,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| C | 7440-44-0 |
| Cu | 7440-50-8 |
| Sn | 7440-31-5 |

IC ICM H01M004-02
ICS C23C018-31; C23C018-32; C23C018-48; C23C018-52; C25D005-12; C25D005-50; C25D007-00; H01M004-04; H01M004-38; H01M004-66
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium **battery anode** manuf;
**battery anode** copper tin alloy plated copper alloy
IT **Battery anodes**
(compns. and manuf. of **anode** materials contg. Cu-Sn plated Cu or Cu alloys for secondary lithium **batteries**)
IT 7440-02-0, Nickel, uses 7440-31-5, Tin, uses 7440-50-8, Copper, uses 11143-56-9 12019-69-1 12621-68-0 12668-36-9 39398-44-2 73235-25-3 95079-63-3 110833-60-8 479352-43-7, Cobalt copper phosphide **587840-11-7** 591767-70-3
RL: TEM (Technical or engineered material use); USES (Uses)
(compns. and manuf. of **anode** materials contg. Cu-Sn plated Cu or Cu alloys for secondary lithium **batteries**)

L38 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:734244 HCAPLUS
DOCUMENT NUMBER: 137:265578
TITLE: Anode and **battery** using the anode
INVENTOR(S): Akashi, Hiroyuki; Shibamoto, Gorou; Adachi, Momoe; Fujita, Shigeru
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2002279971 | A2 | 20020927 | JP 2001-75078 | 200103 15 |

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PRIORITY APPLN. INFO.: JP 2001-75078 200103 15

<--

AB The anode has a layer of a light metal intercalating and depositing active mass, where the apparent d. of the material in the layer is ≥40% of the real d. of the material. The material is preferably has a carbonaceous material, and may also contain metal, semiconductor, alloy, or compd. capable of alloying with the light metal. The light metal is preferably Li.

IT **140929-64-2**
RL: DEV (Device component use); USES (Uses)
(synthetic graphite; Li intercalation-deposition carbonaeous

material based **anode** with controlled d. for secondary lithium **batteries**)
RN 140929-64-2 HCAPLUS
CN Graphite, alloy, graphite 70,Sn 30 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Graphite | 70 | 7782-42-5 |
| Sn | 30 | 7440-31-5 |

IC ICM H01M004-02
ICS H01M004-38; H01M004-58; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **battery** lithium intercalating depositing metal carbonaceous anode; metal carbonaceous anode density control secondary lithium **battery**
IT **Battery** anodes
(Li intercalation-deposition carbonaeous material based anode with controlled d. for secondary lithium **batteries**)
IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(graphitization resistant; Li intercalation-deposition carbonaeous material based anode with controlled d. for secondary lithium **batteries**)
IT **140929-64-2**
RL: DEV (Device component use); USES (Uses)
(synthetic graphite; Li intercalation-deposition carbonaeous material based **anode** with controlled d. for secondary lithium **batteries**)
IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(synthetic; Li intercalation-deposition carbonaeous material based anode with controlled d. for secondary lithium **batteries**)

L38 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:47908 HCAPLUS
DOCUMENT NUMBER: 136:121056
TITLE: Secondary nonaqueous electrolyte **battery**
INVENTOR(S): Kono, Tatsuoki; Takami, Norio
PATENT ASSIGNEE(S): Toshiba Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2002015729 | A2 | 20020118 | JP 2000-199943 | 200006 30 <-- |
| JP 3535454 | B2 | 20040607 | | |
| PRIORITY APPLN. INFO.: | | | JP 2000-199943 | 200006 30 <-- |

AB The **battery** has an anode contg. an alkali metal intercalating alloy formed on a collector and a carbonaceous coating on the alloy layer.
IT **390361-52-1**
RL: MOA (Modifier or additive use); USES (Uses)

(carbonaceous coatings for lithium intercalating alloy anodes in secondary lithium **batteries**)
RN 390361-52-1 HCAPLUS
CN Carbon alloy, base, C 66,Sn 34 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| C | 66 | 7440-44-0 |
| Sn | 34 | 7440-31-5 |

IC ICM H01M004-02
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** alkali metal intercalating alloy anode carbonaceous coating
IT **Battery** anodes
(lithium intercalating alloy anodes with carbonaceous coatings for secondary lithium **batteries**)
IT 7440-44-0, Carbon, uses 390361-50-9 **390361-52-1** 390361-54-3 390361-56-5
RL: MOA (Modifier or additive use); USES (Uses)
(carbonaceous coatings for lithium intercalating alloy **anodes** in secondary lithium **batteries**)
IT 39460-45-2 116911-10-5 186136-79-8 390361-44-1 390361-48-5
RL: DEV (Device component use); USES (Uses)
(lithium intercalating alloy anodes with carbonaceous coatings for secondary lithium **batteries**)

L38 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:498241 HCAPLUS
DOCUMENT NUMBER: 135:306075
TITLE: Graphite-tin composites as anode materials for lithium-ion **batteries**
AUTHOR(S): Wang, G. X.; Ahn, J.-H.; Lindsay, M. J.; Sun, L.; Bradhurst, D. H.; Dou, S. X.; Liu, H. K.
CORPORATE SOURCE: Institute for Superconducting and Electronic Materials, Energy Storage Materials Research Program, University of Wollongong, Wollongong, 2522, Australia
SOURCE: Journal of Power Sources (**2001**), 97-98, 211-215
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Graphite-tin composites were produced by high-energy ball-milling. X-ray diffraction and HREM observation showed that graphite became amorphous and tin became nanocryst. after the intensive ball milling. The element Sn was encapsulated in the ductile graphite matrix on a nanometer scale. The lithium storage capacity increases with the addn. of Sn, which could be attributed to the reaction of Sn with Li to form LixSn alloys. The vol. expansion due to the alloying process may be buffered by the amorphous graphite matrix. The C0.9Sn0.1 electrode can deliver a discharge capacity of 1250 mAh/g in the initial cycle. Generally, the capacity of the ball-milled C, C0.9Sn0.1 and C0.8Sn0.2 electrodes decrease with cycling quite quickly, but the C0.9Sn0.1 and C0.8Sn0.2 electrodes have better cyclability than that of the ball-milled graphite electrode. The combination of C and Sn could be an anode material with high capacity for lithium-ion **batteries**.
IT **365513-40-2 365513-41-3**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(graphite-tin composites as **anode** materials for lithium-ion **batteries**)

RN 365513-40-2 HCAPLUS
CN Graphite, compd. with tin (9:1) (9CI) (CA INDEX NAME)

CM 1

CRN 7782-42-5
CMF C
CCI MNS

C

CM 2

CRN 7440-31-5
CMF Sn

Sn

RN 365513-41-3 HCAPLUS
CN Graphite, compd. with tin (5:1) (9CI) (CA INDEX NAME)

CM 1

CRN 7782-42-5
CMF C
CCI MNS

C

CM 2

CRN 7440-31-5
CMF Sn

Sn

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium secondary **batteries** anodes graphite tin composites
IT Anodes
Composites
(graphite-tin composites as anode materials for lithium-ion **batteries**)
IT Secondary **batteries**
(lithium; graphite-tin composites as anode materials for lithium-ion **batteries**)
IT 7440-31-5, Tin, processes 7782-42-5, Graphite, processes
**365513-40-2 365513-41-3**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(graphite-tin composites as **anode** materials for lithium-ion **batteries**)
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:377176 HCAPLUS
DOCUMENT NUMBER: 134:355496
TITLE: Secondary nonaqueous electrolyte **batteries**
INVENTOR(S): Kajiura, Hisashi; Yamaura, Kiyoshi
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001143701 | A2 | 20010525 | JP 1999-325940 | 19991116 |

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PRIORITY APPLN. INFO.: JP 1999-325940 19991116

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AB The **batteries** have Li intercalating **electrodes** and nonaq. electrolyte soln., where the **anode** active mass contains a Li alloying alloy phase and a Li nonalloying alloy phases. The alloying phase is preferably CoSn, CoSn2, Co3Sn2, Ni3Sn4, Ni3Sn2, and/or Ni3Sn; and the nonalloying phase is Co3SnC0.7, Co2C, Co3C, and/or Ni3C.

IT **339334-52-0**, Cobalt tin carbide (Co3SnC0.7)
RL: DEV (Device component use); USES (Uses)
(**anodes** from alloys contg. lithium alloying and nonalloying phases for secondary lithium **batteries**)

RN 339334-52-0 HCAPLUS
CN Cobalt tin carbide (Co3SnC0.7) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 3 | 7440-48-4 |
| C | 0.7 | 7440-44-0 |
| Sn | 1 | 7440-31-5 |

IC ICM H01M004-40
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium **battery anode** alloy compn; lithium alloying nonalloying phase **battery anode** alloy; cobalt tin alloy lithium **battery anode**; nickel tin alloy lithium **battery anode**; carbon metal alloy lithium **battery anode**

IT **Battery anodes**
(**anodes** from alloys contg. lithium alloying and nonalloying phases for secondary lithium **batteries**)

IT 7439-93-2, Lithium, uses 12011-59-5, Cobalt carbide (Co3C) 12012-02-1, Nickel carbide (Ni3C) 12059-23-3 12059-24-4 12192-29-9, Cobalt carbide (Co2C) 12202-01-6 12297-65-3 12394-61-5 12526-67-9 **339334-52-0**, Cobalt tin carbide (Co3SnC0.7)
RL: DEV (Device component use); USES (Uses)
(**anodes** from alloys contg. lithium alloying and nonalloying phases for secondary lithium **batteries**)

L38 ANSWER 9 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:326361 HCAPLUS

DOCUMENT NUMBER: 134:341670
TITLE: Electroconductive antioxidation coatings and graphite electrodes using them
INVENTOR(S): Hisashi, Hideyuki; Kawabata, Kazumasa
PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan; Mikuni Color Works Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001123123 | A2 | 20010508 | JP 1999-308603 <-- | 19991029 |
| US 2003035956 | A1 | 20030220 | US 2001-809749 <-- | 20010315 |
| US 6645629 | B2 | 20031111 | | |
| CN 1375526 | A | 20021023 | CN 2001-109172 <-- | 20010316 |
| US 2004023021 | A1 | 20040205 | US 2003-621838 <-- | 20030716 |

| PRIORITY APPLN. INFO.: | | | |
|---|---|---|---|
| | | JP 1999-308603 A <-- | 19991029 |
| | | US 2001-809749 A1 <-- | 20010315 |

AB The coatings, useful for graphite electrodes for steel making furnaces, contain electroconductive materials, antioxidants, polymer emulsions, inorg. colloids, and transition metals in aq. media, wherein the content of alkali metals and/or alk. earth metals (Cb) is 20% or less (based on the antioxidants). Thus, an aq. compn. comprising carbon black (4000B), graphite powders, SiC, B4C, a latex emulsion, colloidal silica, Cr powders, and dispersants was applied on a graphite electrode to give a coating showing Cb 0.56%, surface elec. resistivity 2 Ω after heating at 400° for 30 min, and no damage after heating at 1000° for 30 min.

IT **52036-93-8**, Tin carbide
RL: TEM (Technical or engineered material use); USES (Uses)
(antioxidant; electroconductive antioxidn. coatings for graphite **electrodes** for steel-making furnaces)

RN 52036-93-8 HCAPLUS
CN Tin carbide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| C | x | 7440-44-0 |
| Sn | x | 7440-31-5 |

IC ICM C09D201-00
ICS C09D005-00; C09D005-02; C09D005-24; C09D007-12; H01B001-04;

H01B001-24
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 55, 57, 72
IT 1299-86-1, Aluminum carbide 7440-21-3, Silicon, uses 7440-42-8, Boron, uses 10043-11-5, Boron nitride, uses 12033-89-5, Silicon nitride, uses 12070-08-5, Titanium carbide 12070-14-3, Zirconium carbide 24304-00-5, Aluminum nitride 25583-20-4, Titanium nitride 25658-42-8, Zirconium nitride 51845-89-7, Germanium nitride **52036-93-8**, Tin carbide 55574-97-5, Tin nitride 67422-42-8, Antimony carbide 67527-63-3, Germanium carbide 143499-07-4, Antimony nitride
RL: TEM (Technical or engineered material use); USES (Uses)
(antioxidant; electroconductive antioxidn. coatings for graphite **electrodes** for steel-making furnaces)

L38 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:324524 HCAPLUS
DOCUMENT NUMBER: 134:341669
TITLE: Electroconductive antioxidation coatings and graphite electrodes using them
INVENTOR(S): Hisashi, Hideyuki; Kawabata, Kazumasa
PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan; Mikuni Color Works Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001123124 | A2 | 20010508 | JP 1999-308604 | 19991029 <-- |
| PRIORITY APPLN. INFO.: | | | JP 1999-308604 | 19991029 <-- |

AB The coatings, useful for graphite electrodes for steel making furnaces, contain electroconductive materials, antioxidants, polymer emulsions, inorg. colloids, and transition metals in aq. media, wherein the pH of the coatings is 9.0 or less. Thus, an aq. compn. with pH 7.2 comprising carbon black (4000B), graphite powders, SiC, B4C, a latex emulsion, colloidal silica, Cr powders, and dispersants was applied on a graphite electrode to give a coating showing surface elec. resistivity 2 Ω after heating at 400° for 30 min and no damage after heating at 1000° for 30 min.
IT **52036-93-8**, Tin carbide
RL: TEM (Technical or engineered material use); USES (Uses)
(antioxidant; electroconductive antioxidn. coatings for graphite **electrodes** for steel-making furnaces)
RN 52036-93-8 HCAPLUS
CN Tin carbide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| C | x | 7440-44-0 |
| Sn | x | 7440-31-5 |

IC ICM C09D201-00
ICS C09D005-24; C09D007-12; C09K015-32; H05B007-085
CC 42-10 (Coatings, Inks, and Related Products)

Section cross-reference(s): 55, 57, 72
IT 1299-86-1, Aluminum carbide 7440-21-3, Silicon, uses 7440-42-8, Boron, uses 10043-11-5, Boron nitride, uses 12033-89-5, Silicon nitride, uses 12070-08-5, Titanium carbide 12070-14-3, Zirconium carbide 24304-00-5, Aluminum nitride 25583-20-4, Titanium nitride 25658-42-8, Zirconium nitride 51845-89-7, Germanium nitride **52036-93-8**, Tin carbide 55574-97-5, Tin nitride 67422-42-8, Antimony carbide 67527-63-3, Germanium carbide 143499-07-4, Antimony nitride
RL: TEM (Technical or engineered material use); USES (Uses)
(antioxidant; electroconductive antioxidn. coatings for graphite **electrodes** for steel-making furnaces)

L38 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:19960 HCAPLUS
DOCUMENT NUMBER: 134:149936
TITLE: Search for suitable matrix for the use of tin-based anodes in lithium ion **batteries**
AUTHOR(S): Santos-Pena, J.; Brousse, T.; Schleich, D. M.
CORPORATE SOURCE: ISITEM, Laboratoire Genie des Materiaux, Nantes, F44306, Fr.
SOURCE: Solid State Ionics (**2000**), 135(1-4), 87-93
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Graphite is proposed as matrix for tin which is able to react inside the graphite sheets with lithium. If this matrix should be able to support the **cell** changes assocd. to the formation of lithium-tin alloys, an improvement of the performance of the lithium ion **battery** anode would be expected. Two techniques, (vapor phase and molten salt techniques, resp.) have been considered to obtain graphite intercalation compds. (GIC) with tin chlorides. The subsequent redn. of these systems with hydrogene at 400°C must lead to tin GICs. Due to the little extent of the intercalation reaction, the obtained compds. possess a maximal compn. of Sn0.044C6. Despite the small amt. of intercalated tin, potentiostatic tests reveal that both tin and graphite are electrochem. active vs. lithium. Galvanostatic tests indicate that the contribution of tin to the system total capacity increases for the molten salt samples and remains almost const. for the vapor phase samples. This behavior seems to indicate that the activity of tin intercalated atoms is very stable compared to pure graphite. The upper capacity found, 400 mAh/g, corresponds to the Sn0.044C6 system, obtained by the molten salt technique. Its good electrochem. properties agree with our idea that graphite is an adequate matrix for the tin atoms or clusters presents therein.
IT **89248-61-3**, Graphite compd. with tin
RL: DEV (Device component use); USES (Uses)
(matrix for the use of tin-based **anodes** in lithium ion **batteries**)
RN 89248-61-3 HCAPLUS
CN Graphite, compd. with tin (9CI) (CA INDEX NAME)

CM 1

CRN 7782-42-5
CMF C
CCI MNS

C

CM 2

CRN 7440-31-5
CMF Sn

Sn

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST lithium **battery** anode tin matrix; graphite intercalated tin anode **battery**
IT Intercalation compounds
RL: DEV (Device component use); USES (Uses)
(graphite-tin; matrix for the use of tin-based anodes in lithium ion **batteries**)
IT Secondary **batteries**
(lithium; matrix for the use of tin-based anodes in lithium ion **batteries**)
IT **Battery** anodes
(matrix for the use of tin-based anodes in lithium ion **batteries**)
IT 7440-31-5, Tin, uses **89248-61-3**, Graphite compd. with tin
RL: DEV (Device component use); USES (Uses)
(matrix for the use of tin-based **anodes** in lithium ion **batteries**)
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:210572 HCAPLUS
DOCUMENT NUMBER: 132:210263
TITLE: **Anode** materials for secondary lithium **batteries**, **anodes** from the materials, the **batteries**, and manufacture of the **anodes** and the **batteries**
INVENTOR(S): Kawakami, Soichiro; Asao, Masaya
PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan
SOURCE: PCT Int. Appl., 111 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2000017948 | A1 | 20000330 | WO 1999-JP5092 | 199909 17 |
| | | | <-- | |
| W: CA, CN, KR, US | | | | |
| RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| JP 2000311681 | A2 | 20001107 | JP 1999-261516 | 199909 16 |
| | | | <-- | |
| JP 3620703 | B2 | 20050216 | | |
| CA 2310475 | AA | 20000330 | CA 1999-2310475 | 199909 |

17
<--
EP 1039568 A1 20000927 EP 1999-943402
199909
17
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI
CN 1492525 A 20040428 CN 2001-2001140730
199909
17
<--
TW 468287 B 20011211 TW 1999-88116171
199909
18
<--
US 6949312 B1 20050927 US 2000-554794
200008
14
<--
US 2005175901 A1 20050811 US 2005-104440
200504
13
<--
PRIORITY APPLN. INFO.: JP 1998-282087 A
199809
18
<--
JP 1999-50471 A
199902
26
<--
JP 1999-261516 A
199909
16
<--
WO 1999-JP5092 W
199909
17
<--
US 2000-554794 A3
200008
14
<--

AB The **anode** materials contain particles of amorphous non-stoichiometric alloy Sn-A-X, where A = transition metal(s), X is an optional component and is selected from O, F, N, Mg, Ba, Sr, Ca, La, Ce, Si, Ge, C, P, B, Bi, Sb, Al, In, and Zn. The **anode** have the above **anode** materials applied on a collector which does not form alloys with Li and are prepd. by applying the material on the collector.

IT **260805-56-9P**
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(compns. and manuf. of **anode** materials for secondary lithium **batteries**)

RN 260805-56-9 HCAPLUS

CN Carbon alloy, nonbase, C,Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| C | 7440-44-0 |
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

IC ICM H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery anode** amorphous tin alloy
IT **Battery anodes**
(compns. and manuf. of **anode** materials for secondary lithium **batteries**)
IT 62186-40-7P 67828-86-8P 68112-75-4P 70797-67-0P 105739-32-0P
108091-51-6P 119411-97-1P 260805-52-5P 260805-53-6P
260805-54-7P 260805-55-8P **260805-56-9P** 260805-57-0P
260805-58-1P 260805-59-2P 260805-60-5P 260805-61-6P
260805-62-7P 260805-63-8P 260805-64-9P 260805-65-0P
260805-66-1P 260805-67-2P 260805-68-3P 260805-69-4P
260805-70-7P 260805-71-8P 260805-72-9P 260805-73-0P
260805-74-1P 260805-75-2P 260805-76-3P 260805-77-4P
260805-78-5P 260805-79-6P 260805-80-9P 260805-81-0P
260805-82-1P 260805-83-2P 260805-84-3P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(compns. and manuf. of **anode** materials for secondary lithium **batteries**)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1997:200927 HCAPLUS
DOCUMENT NUMBER: 126:310703
TITLE: Electrical and optical properties of carbon-tin films plasma-deposited from tetramethyltin in a three-electrode reactor
AUTHOR(S): Tyczkowski, J.; Pietrzyk, B.; Hatanaka, Y.; Nakanishi, Y.
CORPORATE SOURCE: Center of Molecular and Macromolecular Studies, Polish Academy of Sciences, Sienkiewicza 112, Lodz, 90-363, Pol.
SOURCE: Applied Surface Science (**1997**), 113/114, 534-538
CODEN: ASUSEE; ISSN: 0169-4332
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Electronic properties of amorphous hydrogenated C-Sn films (a-SnXCY:H) plasma-deposited in a three-electrode reactor were studied. Small changes in the parameter V(-), describing the ion impact energy in the deposition process, cause a drastic change in the electronic structure of the films. This effect is attributed to the amorphous insulator-amorphous semiconductor transition. To understand the nature of the transition effect better, studies of a structure transformation process, taking place in the semiconducting films under the influence of O, were performed.
IT **52036-93-8P**, Tin carbide
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(hydrogenated; elec. and optical properties of carbon-tin films plasma-deposited from tetramethyltin in a three-**electrode** reactor)
RN 52036-93-8 HCAPLUS
CN Tin carbide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| C | x | 7440-44-0 |
| Sn | x | 7440-31-5 |

CC 76-1 (Electric Phenomena)

IT **52036-93-8P**, Tin carbide
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(hydrogenated; elec. and optical properties of carbon-tin films plasma-deposited from tetramethyltin in a three-**electrode** reactor)

L38 ANSWER 14 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:350582 HCAPLUS
DOCUMENT NUMBER: 122:110624
TITLE: Secondary nonaqueous electrolyte **batteries** with improved anodes
INVENTOR(S): Fujimoto, Masahisa; Nishio, Koji; Saito, Toshihiko
PATENT ASSIGNEE(S): Sanyo Electric Co, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 06290782 | A2 | 19941018 | JP 1993-96876 | 199303 30 <-- |
| PRIORITY APPLN. INFO.: | | | JP 1993-96876 | 199303 30 <-- |

AB The **batteries** use anodes composed of ≥1 carbide of Cr, Si, Co, Zr, W, Ge, Ta, Ti, Fe, Nb, Ni, V, B, Hf, and Mo or ≥ nitrides of In, Ga, Cr, Si, Ge, Co, Zr, Sn, W, Ta, Ti, Fe, Nb, Ni, V, Mn, Hf, and Mo capable of intercalating with alkali metal ions, e.g., Li, or alk. earth ions, e.g., Ca.

IT **52036-93-8**, Tin carbide
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(lithium intercalating carbide and nitride **anodes** for secondary nonaq. **batteries**)
RN 52036-93-8 HCAPLUS
CN Tin carbide (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| C | x | 7440-44-0 |
| Sn | x | 7440-31-5 |

IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** lithium intercalating carbide anode; nitride lithium intercalating **battery** anode; alk earth intercalating **battery** anode
IT Anodes
(**battery**, lithium intercalating carbide and nitride anodes for secondary nonaq. **batteries**)
IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(lithium intercalating carbide and nitride anodes for secondary nonaq. **batteries**)
IT 409-21-2, Silicon carbide, uses 11115-87-0, Hafnium nitride

11129-37-6, Hafnium carbide 11130-21-5, Vanadium carbide
11130-49-7, Chromium carbide 11130-73-7, Tungsten carbide
12033-89-5, Silicon nitride, uses 12069-32-8, Boron carbide (B4C)
12069-94-2, Niobium carbide 12070-08-5, Titanium carbide
12627-57-5, Molybdenum carbide 12640-64-1, Iron carbide
12646-17-2, Manganese nitride 12648-34-9, Niobium nitride
12674-04-3, Vanadium nitride 12705-37-2, Chromium nitride
12710-36-0, Nickel carbide 12738-11-3, Nickel nitride
24621-21-4, Niobium nitride (NbN) 25583-20-4, Titanium nitride
25617-97-4, Gallium nitride 25617-98-5, Indium nitride
37245-77-5, Iron nitride 37245-81-1, Molybdenum nitride
37359-53-8, Tungsten nitride 51177-04-9, Cobalt carbide
51680-51-4, Tantalum carbide 51680-56-9, Zirconium carbide
51845-89-7, Germanium nitride **52036-93-8**, Tin carbide
55326-68-6, Cobalt nitride 59114-58-8, Tantalum nitride
67527-63-3, Germanium carbide 119173-61-4, Zirconium nitride
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(lithium intercalating carbide and nitride **anodes** for secondary nonaq. **batteries**)

L38 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1973:434471 HCAPLUS
DOCUMENT NUMBER: 79:34471
TITLE: **Electrode** holder for an electric arc furnace
INVENTOR(S): Yoshimura, Tsuneo; Suzuki, Kunio; Shikano, Gohei
PATENT ASSIGNEE(S): Mitsubishi Steel Manufacturing Co., Ltd.; Toyo Carbon Co., Ltd.
SOURCE: U.S., 23 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| US 3717445 | A | 19730220 | US 1970-87086 <-- | 19701105 |
| JP 50022737 | B4 | 19750801 | JP 1970-89329 <-- | 19701013 |
| JP 50022738 | B4 | 19750801 | JP 1970-89330 <-- | 19701013 |
| GB 1325179 | A | 19730801 | GB 1970-53746 <-- | 19701111 |
| SE 377264 | B | 19750623 | SE 1970-15221 <-- | 19701111 |
| PRIORITY APPLN. INFO.: | | | JP 1969-90676 A <-- | 19691112 |
| | | | JP 1970-89329 A | 19701013 |

<--
JP 1970-89330 A
197010
13
<--

AB A sintered alloy liner suitable for a graphite **electrode** holder of the elec.-arc furnace is described. The liner has a surface that corforms to the surface of the **electrode.** The liner is a porous, sintered, powder-metallurgical alloy contg. 30-100% of powd. Cu, Fe, and Al and mixts. thereof, 0-50% of graphite powder, 0-30% of an addnl. metal powder selected from Sn, Pb, Zn, Mg, W, Mo, Co, Ta, Cr, Ti, Be, Ag, Mn, and Cd and mixts. thereof, and 0-3% of C and graphite fiber and mixts. thereof. The liner comprises 2 or more porous, powder-metallurgical members laminated together. The mixed powders are molded to the desired form and the molded member is sintered to provide a porous, conductive structure.

IT **39352-60-8**
RL: USES (Uses)
(sintered lining, for graphite **electrode** holder of elec.-arc furnace)

RN 39352-60-8 HCAPLUS
CN Copper alloy, base, Cu 93,graphite 5,Sn 2 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Cu | 93 | 7440-50-8 |
| Graphite | 5 | 7782-42-5 |
| Sn | 2 | 7440-31-5 |

IC H05B
INCL 029182300
CC 55-4 (Ferrous Metals and Alloys)
ST sintered lining **electrode** holder; elec furnace **electrode** holder; graphite **electrode** holder lining

IT **Electrodes**
(graphite, sintered alloy holder for, for elec.-arc furnace)

IT Linings
(sintered alloy, for graphite **electrode** holder of elec.-arc furnace)

IT 7782-42-5, uses and miscellaneous
RL: USES (Uses)
(**electrode**, sintered alloys for holder of, for elec.-arc furnace)

IT 39351-33-2 39352-59-5 **39352-60-8** 39352-61-9
RL: USES (Uses)
(sintered lining, for graphite **electrode** holder of elec.-arc furnace)

IT 7440-50-8, uses and miscellaneous 39351-23-0 39351-24-1 39351-29-6 39351-30-9 39352-56-2 39352-57-3 39354-03-5 39354-04-6
RL: USES (Uses)
(sintered linings, for graphite **electrode** holder of elec.-arc furnace)

L38 ANSWER 16 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1964:453080 HCAPLUS
DOCUMENT NUMBER: 61:53080
ORIGINAL REFERENCE NO.: 61:9174f-h
TITLE: Fuel **cell**
INVENTOR(S): Tragert, William E.; Fullman, Robert L.; Carter, Ralph E.
PATENT ASSIGNEE(S): General Electric Co.
SOURCE: 6 pp.
DOCUMENT TYPE: Patent

LANGUAGE: Unavailable
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| US 3138490 | | 19640623 | US 1963-312710 | 196309<br>30 |

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AB A high-temp. (1000-1200°) fuel **cell** in which the electrolyte is solid and the **electrodes** are in the liq. state during **cell** operation consists of an open container of Al2O3, or C in which is positioned a 2nd container of solid stabilized zirconia, the **cell** electrolyte. A metallic, C-solvent **electrode**, such as Fe satd. with C or Co-Sn satd. with C, is placed in the 1st container in direct contact with the 2nd container, which contains the Ag **electrode.** A C lead is inserted into the 1st container, while a stainless steel lead is inserted into the Ag **electrode.** The C lead, providing elec. contact, dissolves to maintain C satn. of the **anode.** A gaseous oxidant (air or O) is supplied to the Ag **electrode.** The reactions occurring during operation of the fuel **cell** are the same as those described in U.S. 3,138,488 (CA 61, 7951f). Several modified fuel **cells** are also described.

IT **260805-56-9**, Cobalt alloys, carbon-Sn-
(**electrodes**, fuel **cell** with molten)

RN 260805-56-9 HCAPLUS

CN Carbon alloy, nonbase, C,Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| C | 7440-44-0 |
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

INCL 136086000

CC 15 (Electrochemistry)

IT Voltaic **cells**
(fuel, with molten Ag cathode and solid oxide electrolyte)

IT **Electrodes**
(fuel-**cell**, molten, in solid electrolytes)

IT 7440-22-4, Silver 12716-37-9, Iron alloys, carbon-**260805-56-9**, Cobalt alloys, carbon-Sn-
(**electrodes**, fuel **cell** with molten)

IT 1314-23-4, Zirconium oxide, ZrO2
(fuel **cell** with electrolyte of solid, with molten **electrodes**)

=> d his

(FILE 'HOME' ENTERED AT 16:13:09 ON 19 MAY 2006)

FILE 'REGISTRY' ENTERED AT 16:13:36 ON 19 MAY 2006
L1 309 S SN/ELS (L) 1/ELC.SUB
L2 183 S (CO (L) SN)/ELS (L) 2/ELC.SUB
L3 492 S L1 OR L2
L4 37 S (C(L)SN)/ELS (L) 2/ELC.SUB
L5 66 (C (L) CO (L) SN)/ELS (L) 3/ELC.SUB
L6 694 S (CU(L) SN)/ELS (L) 2/ELC.SUB
L7 76 S (C (L) CU (L) SN)/ELS (L) 3/ELC.SUB

FILE 'HCAPLUS' ENTERED AT 16:24:20 ON 19 MAY 2006

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L8        103068 S L1
L9           505 S L2
L10           81 S L4
L11           11 S L5
L12         5781 S L6
L13           87 S L7
L14          596 S L8 (L) ANOD? (L) BATTER?
L15           30 S L14 (L) PARTICLE#
L16           30 S L15 AND ELECTROCHEMICAL?/SC,SX
L17           48 S L9 (L) ANOD?
L18           44 S L17 (L)(BATTER? OR CELL#)
L19           44 S L18 AND ELECTROCHEMICAL?/SC,SX
L20            8 S L10 (L) (ELECTROD? OR ANOD?)
L21            5 S L20 AND (BATTER? OR CELL#)
L22            5 S L21 AND ELECTROCHEMICAL?/SC,SX
L23           16 S L10 AND (ELECTROD? OR ANOD?)
L24            7 S L23 AND (BATTER? OR CELL#)
L25            7 S L24 AND ELECTROCHEMICAL?/SC,SX
L26            9 S L11 AND (ELECTROD? OR ANOD?)
L27            9 S L26 AND (BATTER? OR CELL#)
L28            8 S L27 AND ELECTROCHEMICAL?/SC,SX
L29          109 S L12 (L) ANOD? (L) BATTER?
L30            8 S L29 (L) PARTICLE#
L31           22 S L29 AND PARTICLE#
L32            8 S L30 AND ELECTROCHEMICAL?/SC,SX
L33           22 S L31 AND ELECTROCHEMICAL?/SC,SX
L34            5 S L13 AND (ANOD? OR ELECTROD?)
L35            4 S L34 AND (BATTER? OR CELL#)
L36            4 S L35 AND ELECTROCHEMICAL?/SC,SX
L37           19 S L20 OR L21 OR L26 OR L27 OR L34 OR L35
L38           16 S L37 AND (1907-2003)/PRY,AY,PY
L39           88 S L16 OR L19 OR L30 OR L31
L40           74 S L39 AND (1907-2003)/PRY,AY,PY
L41           71 S L40 NOT L38


=> file reg
FILE 'REGISTRY' ENTERED AT 17:40:42 ON 19 MAY 2006
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=> d l41 que stat
L1           309 SEA FILE=REGISTRY ABB=ON  PLU=ON  SN/ELS (L) 1/ELC.SUB
L2           183 SEA FILE=REGISTRY ABB=ON  PLU=ON  (CO (L) SN)/ELS (L)
                 2/ELC.SUB
L4            37 SEA FILE=REGISTRY ABB=ON  PLU=ON  (C(L)SN)/ELS (L)
                 2/ELC.SUB
L5            66 SEA FILE=REGISTRY ABB=ON  PLU=ON  (C (L) CO (L) SN)/ELS
                 (L) 3/ELC.SUB
L6           694 SEA FILE=REGISTRY ABB=ON  PLU=ON  (CU(L) SN)/ELS (L)
                 2/ELC.SUB
L7            76 SEA FILE=REGISTRY ABB=ON  PLU=ON  (C (L) CU (L) SN)/ELS
                 (L) 3/ELC.SUB
L8        103068 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L1
L9           505 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L2
L10           81 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L4
L11           11 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L5
L12         5781 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L6
L13           87 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L7
L14          596 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L8 (L) ANOD? (L)
                 BATTER?
L15           30 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L14 (L) PARTICLE#
L16           30 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND ELECTROCHEMICAL?
                 /SC,SX
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L17          48 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L9 (L) ANOD?
L18          44 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L17 (L)(BATTER? OR
                CELL#)
L19          44 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L18 AND ELECTROCHEMICAL?
                /SC,SX
L20           8 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L10 (L) (ELECTROD? OR
                ANOD?)
L21           5 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L20 AND (BATTER? OR
                CELL#)
L26           9 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L11 AND (ELECTROD? OR
                ANOD?)
L27           9 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L26 AND (BATTER? OR
                CELL#)
L29         109 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L12 (L) ANOD? (L)
                BATTER?
L31          22 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L29 AND PARTICLE#
L34           5 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L13 AND (ANOD? OR
                ELECTROD?)
L35           4 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L34 AND (BATTER? OR
                CELL#)
L37          19 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L20 OR L21 OR L26 OR
                L27 OR L34 OR L35
L38          16 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L37 AND (1907-2003)/PRY,
                AY,PY
L39          88 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L16 OR L19 OR L30 OR
                L31
L40          74 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L39 AND (1907-2003)/PRY,
                AY,PY
L41          71 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L40 NOT L38


=> file hcaplus
FILE 'HCAPLUS' ENTERED AT 17:40:56 ON 19 MAY 2006
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=> d l41 1-71 ibib abs hitstr hitind

L41  ANSWER 1 OF 71  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:        2005:591700  HCAPLUS
DOCUMENT NUMBER:         143:118028
TITLE:                   Anode active mass for secondary lithium
                         batteries, its manufacture, and secondary
                         lithium batteries and anode active material for
                         secondary lithium batteries using it
INVENTOR(S):             Takakura, Akira; Matsubara, Keiko; Tsuno,
                         Toshiaki; Kim, Sung-Soo
PATENT ASSIGNEE(S):      Samsung SDI Co., Ltd., S. Korea
SOURCE:                  Jpn. Kokai Tokkyo Koho, 14 pp.
                         CODEN: JKXXAF
DOCUMENT TYPE:           Patent
LANGUAGE:                Japanese
FAMILY ACC. NUM. COUNT:  1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ----------------    ----   --------    --------------------
     --------
     JP 2005183253        A2    20050707    JP 2003-424423
                                                                   200312
                                                                   22
                                                 <--
     JP 3773514           B2    20060510
PRIORITY APPLN. INFO.:                      JP 2003-424423
```

200312
22
<--

AB The active mass comprises porous particles contg. H and ≥1 metals which can be alloyed with Li. The active mass is manufd. by dissolving H or a mixt. of H and an inert gas into a melt of the metals mentioned above and unidirectionally solidifying the melt for formation of H-contg. pores in the metals. Preferably, the metals are Si, Al, and/or Sn, or the metal is Si contg. Si phase, SiM phase (M = Ni, Co, As, B, Cr, Cu, Fe, Mg, Mn, Y), and X phase and/or SiX phase (X = Ag, Cu, Au; M = X ≠ Cu). The batteries equipped with the active mass are also claimed. Since oxidn. of the anode is prevented by H, decompn. of an electrolytic soln. is suppressed, and the battery has excellent cycling performance. Since vol. expansion of the anode caused by alloying of the metals with Li is offset by the pores, powdering of the active mass is suppressed.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(manuf. of **anode** active mass comprising H-contg. porous metallic **particles** for Li **batteries** with excellent cycling performance)

RN 7440-31-5 HCAPLUS

CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-38
ICS H01M004-02; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56

IT 1333-74-0, Hydrogen, uses 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses **7440-31-5**, Tin, uses 11107-19-0 11109-42-5 12645-62-4 12661-90-4 12668-55-2 37299-94-8, Boron silicide 39365-72-5 50944-37-1 50955-74-3 53550-14-4 58977-56-3 60866-76-4, Silicon arsenide
RL: DEV (Device component use); USES (Uses)
(manuf. of **anode** active mass comprising H-contg. porous metallic **particles** for Li **batteries** with excellent cycling performance)

L41 ANSWER 2 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:522761 HCAPLUS
DOCUMENT NUMBER: 143:46050
TITLE: Anode material for secondary lithium battery and its manufacture
INVENTOR(S): Wada, Hitoshi; Kajita, Osamu; Sakai, Tetsuo
PATENT ASSIGNEE(S): Fukuda Metal Foil and Powder Co., Ltd., Japan; National Institute of Advanced Industrial Science & Technology
SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2005158305 | A2 | 20050616 | JP 2003-391229 | 200311 20 |

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PRIORITY APPLN. INFO.: JP 2003-391229
200311
20

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AB The anode material is a composite powder, comprising a 1st metal component selected from Co, Cr, Fe, Mn, Mo, Nb, Ni, Ti, V, W, Zr and/or rare earth element, a 2nd metal component selected from Ag, Al, Au, Cu, In, Mg, Pd, Pt, Y, and/or Zn, a 3rd metal component selected from Ga, Ge, Sb, Si, and/or S, an alloy of the 2nd component and the 3rd component, and a carbonaceous component; where the composite powder contains the 1st metal component 5-20 at.%, the 2nd metal component 5-35 at.%, the 3rd metal component 20-55 at.%, and the carbonaceous component 5-50 at.% (total amt. of all 4 components is 100 at.%); and comprises ≥10% primary **particles** having **particle** size 10-500 nm. The anode material is manufd. by mech. alloying a mixt. of the 1st metal component, the 2nd metal component, and the 3rd metal component to obtain a composite powder; and mixing the composite powder with the carbonaceous component followed by mech. alloying.

IT **12668-36-9**
RL: DEV (Device component use); USES (Uses)
(compns. and manuf. of **anode** materials contg. composite powders of carbonaceous materials, metals and metal alloys for secondary lithium **batteries**)

RN 12668-36-9 HCAPLUS
CN Copper alloy, nonbase, Cu,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Cu | 7440-50-8 |
| Sn | 7440-31-5 |

IC ICM H01M004-38
ICS B22F001-00; C22C012-00; C22C013-02; H01M004-02; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-36-0, Antimony, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-54-2, Gadolinium, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-57-5, Gold, uses 7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-74-6, Indium, uses 11099-22-2 11105-41-2 11109-42-5 11124-13-3 11144-61-9 12645-62-4 **12668-36-9** 12785-32-9 12785-33-0 37274-59-2 39313-97-8 50941-27-0 51402-57-4 53218-63-6 53550-14-4 53608-05-2 141850-96-6 164058-34-8
RL: DEV (Device component use); USES (Uses)
(compns. and manuf. of **anode** materials contg. composite powders of carbonaceous materials, metals and metal alloys for secondary lithium **batteries**)

L41 ANSWER 3 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:253910 HCAPLUS
DOCUMENT NUMBER: 142:339030
TITLE: Anode material for secondary lithium battery and its manufacture
INVENTOR(S): Wada, Hitoshi; Kajita, Osamu; Sakai, Tetsuo
PATENT ASSIGNEE(S): Fukuda Metal Foil and Powder Co., Ltd., Japan; National Institute of Advanced Industrial Science and Technology

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2005078999 | A2 | 20050324 | JP 2003-309912 | 20030902 |

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PRIORITY APPLN. INFO.: JP 2003-309912 20030902

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AB The material comprises a composite powder, made of an alloy of 1st component which contains ≥1 element selected from Ag, Al, Au, Ca, Cu, Fe, In, Mg, Pd, Pt, Y, Zn and Ti, V, Cr, Mn, Co, Ni, Y, Zr, Nb, Mo, Hf, Ta, W and rare earth elements and 2nd component which contains ≥1 element selected from Ga, Ge, Sb, Si and Sn; where the composite powder contains the 1st component 40-60 at.% and the 2nd component 40-60 at.% (based on total amt. of the 1st and the 2nd components as 100 at.%); and has ≥10% primary **particles** having **particle** size 10-500 nm. The anode material is manufd. by mixing a raw material, contg. the 1st and the 2nd components; and mech.-alloying the mixt.

IT **12787-61-0P**, Copper 54.5, tin 45.5 (atomic)
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(compns. and manuf. **anode** materials contg. alloys for secondary lithium **batteries**)
RN 12787-61-0 HCAPLUS
CN Tin alloy, base, Sn 61,Cu 39 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 61 | 7440-31-5 |
| Cu | 39 | 7440-50-8 |

IC ICM H01M004-38
ICS B22F001-00; B22F001-02; C22C012-00; C22C016-00; C22C019-03; C22C019-07; C22C030-00; H01M004-02; H01M004-42; H01M004-46
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 12727-60-5P, Indium 50, tin 50 (atomic) **12787-61-0P**, Copper 54.5, tin 45.5 (atomic) 37192-34-0P 37365-43-8P, Platinum 50, tin 50 (atomic) 39285-19-3P, Silver 52, tin 48 (atomic) 39445-99-3P, Gold 50, tin 50 (atomic) 52896-58-9P, Gallium 50, silicon 50 (atomic) 56392-59-7P, Antimony 50, zinc 50 (atomic) 57888-99-0P, Germanium 50, iron 50 (atomic) 72515-82-3P, Gallium 50, gold 50 (atomic) 82879-92-3P, Gold 50, silicon 50 (atomic) 89498-06-6P, Copper 50, germanium 50 (atomic) 93510-64-6P 93510-71-5P 107482-99-5P 107501-09-7P 117036-30-3P, Aluminum 50, silicon 50 (atomic) 117816-43-0P, Antimony 50, copper 50 (atomic) 124280-46-2P, Antimony 50, gold 50 (atomic) 132598-09-5P, Aluminum 50, germanium 50 (atomic) 135866-51-2P, Copper 50, silicon 50 (atomic) 137825-50-4P, Gallium 50, silver 50 (atomic) 145634-33-9P 170473-99-1P 529474-44-0P 529474-49-5P 660388-40-9P 660388-41-0P 660388-42-1P 660388-43-2P 660388-44-3P 660388-45-4P 660388-46-5P 660388-49-8P 697300-30-4P 702645-12-3P, Antimony 15.6, silver 36.4, tin 48 (atomic) 848441-13-4P 848441-15-6P 848441-16-7P 848441-17-8P 848441-18-9P 848441-19-0P 848441-20-3P 848441-21-4P

848441-22-5P 848441-23-6P 848441-24-7P 848441-25-8P
848441-26-9P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(compns. and manuf. **anode** materials contg. alloys for secondary lithium **batteries**)

L41 ANSWER 4 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1037415 HCAPLUS
DOCUMENT NUMBER: 142:25874
TITLE: Secondary nonaqueous electrolyte battery and its manufacture
INVENTOR(S): Sato, Toshitada; Shimamura, Harunari; Ohyama, Hideaki; Bito, Yasuhiko
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 74 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2004105152 | A2 | 20041202 | WO 2004-JP7294 | 200405 21 |
| | | | <-- | |
| WO 2004105152 | A3 | 20050210 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| JP 2005011802 | A2 | 20050113 | JP 2004-150624 | 200405 20 |
| | | | <-- | |
| EP 1638158 | A2 | 20060322 | EP 2004-734368 | 200405 21 |
| | | | <-- | |
| R: DE, FR, GB | | | | |
| CN 1768438 | A | 20060503 | CN 2004-80008500 | 200405 21 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2003-145346 A | 200305 22 |
| | | | <-- | |
| | | | WO 2004-JP7294 W | 200405 21 |

AB The battery has a Li-intercalating cathode, a Li-intercalating anode, and a Li+-conductive electrolyte; where the anode, contg. active mass **particles** on a collector; where the active

material **particles** contain Si and R element (R = Sn, In, Ga, Pb and/or Bi) and a R element contg. metallic bond is formed between the active material **particles**. The battery is manufd. by applying a slurry, comprising Si contg. active mass **particles**, on a collector, having Cu content ≥95 mass%; drying the slurry; forming a 2nd sheet by forming a R element (R = Sn, In, Ga, Pb and/or Bi) contg. film on the surface of the active mass **particles**; and heat-treating the 2nd sheet in a nonoxidative atm. at 80-350°.

IT **12019-61-3 12054-11-4 12621-69-1 39445-33-5**
RL: DEV (Device component use); USES (Uses)
(**anodes** contg. silicon intermetallic compds. in manuf. of secondary lithium **batteries**)

RN 12019-61-3 HCAPLUS
CN Copper, compd. with tin (3:1) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 3 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

RN 12054-11-4 HCAPLUS
CN Copper, compd. with tin (1:1) (8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 1 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

RN 12621-69-1 HCAPLUS
CN Copper alloy, base, Cu 80,Sn 20 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Cu | 80 | 7440-50-8 |
| Sn | 20 | 7440-31-5 |

RN 39445-33-5 HCAPLUS
CN Copper, compd. with tin (4:1) (6CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 4 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

IC ICM H01M
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 7439-92-1, Lead, uses 7440-02-0, Nickel, uses 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-50-8, Copper, uses 7440-55-3, Gallium, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses **12019-61-3** **12054-11-4** 12059-14-2, Nickel silicide **12621-69-1** 12626-76-5, Iron silicide 12643-20-8, Copper silicide 12738-91-9, Titanium silicide **39445-33-5**
RL: DEV (Device component use); USES (Uses)
(**anodes** contg. silicon intermetallic compds. in manuf. of secondary lithium **batteries**)

L41 ANSWER 5 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1019065 HCAPLUS
DOCUMENT NUMBER: 142:9292

TITLE: Anode for secondary battery and secondary nonaqueous electrolyte battery
INVENTOR(S): Kato, Yoshikazu
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004335379 | A2 | 20041125 | JP 2003-132191 | 20030509 |

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PRIORITY APPLN. INFO.: JP 2003-132191 20030509

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AB The anode has an anode mixt., contg. an active mass capable of doping/dedoping Li, and an org. additive, comprising an org. acid and/or an org. acid salt, added to the anode mixt. The battery has the above anode, a cathode, having a cathode mixt. which contains an active mass capable of doping/dedoping Li, and an electrolyte soln. which contains an electrolyte salt.

IT **39286-52-7**
RL: DEV (Device component use); USES (Uses)
(**anodes** contg. org. additives for secondary lithium **batteries**)
RN 39286-52-7 HCAPLUS
CN Cobalt alloy, nonbase, Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

IC ICM H01M004-62
ICS H01M004-02; H01M004-38; H01M010-40
CC 52-5 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide (CoLiO2) 21324-40-3, Lithium hexafluorophosphate **39286-52-7**
RL: DEV (Device component use); USES (Uses)
(**anodes** contg. org. additives for secondary lithium **batteries**)

L41 ANSWER 6 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1019056 HCAPLUS
DOCUMENT NUMBER: 142:9210
TITLE: Anode material for secondary nonaqueous electrolyte battery, its manufacture, and the battery which uses the material
INVENTOR(S): Zhang, Shou-wu; Kuba, Kanji; Watarai, Yusuke
PATENT ASSIGNEE(S): Mitsubishi Materials Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004335335 | A2 | 20041125 | JP 2003-131275 | 20030509 |

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PRIORITY APPLN. INFO.: JP 2003-131275 20030509

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AB The anode material comprises composite **particles**, having ceramics coated on a part of Li-intercalating mineral **particles**; where the mineral **particles** contain Si, Sn and/or Zn as constituent element; and the ceramics are composed of an oxide, a nitride, or a carbide, which contains Si, Ti, Al and/or Zr, and covers 20-95% total surface of the mineral **particles**. The anode material is manufd. by prepg. 0.02-20 μm av. **particle** sized mineral **particles**, comprising ≥1 substance selected from Si, metal silicide, B doped Si, P doped Si, Zn, Sn, Zn contg. solid soln., Sn contg. solid soln., Zn contg. intermetallic compds., and Sn contg. intermetallic compds.; soling a precursor org. mol. soln., which contains Si, Ti, Al and/or Zr, by hydrolysis reaction and dehydrative polycondensation; mixing the mineral **particles** with the sol to coat the sol on the mineral **particles**; gelatinizing the sol; and firing the gel in a nonoxidative atm. at 600-1300° for 0.5-3 h to form composite **particles** which have the ceramics coated on a part of the mineral **particles**. The battery uses the above material as an anode active mass.

IT **12019-69-1**
RL: DEV (Device component use); USES (Uses)
(manuf. of **anode** materials contg. ceramics coated mineral **particle** for secondary **batteries**)

RN 12019-69-1 HCAPLUS

CN Copper, compd. with tin (6:5) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 6 | 7440-50-8 |
| Sn | 5 | 7440-31-5 |

IC ICM H01M004-38
ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery anode mineral ceramics composite **particle** manuf

IT Battery anodes
Secondary batteries
(manuf. of anode materials contg. ceramics coated mineral **particle** for secondary batteries)

IT 1344-28-1, Alumina, uses 7440-21-3, Silicon, uses 7440-21-3D, Silicon, B doped 7440-21-3D, Silicon, P doped **12019-69-1** 12688-08-3, Carbon titanium oxide 39345-87-4, Silicon carbide oxide 171089-01-3, Iron silicide (Fe0.2Si0.8)
RL: DEV (Device component use); USES (Uses)
(manuf. of **anode** materials contg. ceramics coated mineral **particle** for secondary **batteries**)

L41 ANSWER 7 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1019055 HCAPLUS
DOCUMENT NUMBER: 142:9209

TITLE: Anode material for secondary nonaqueous electrolyte battery, its manufacture, and the battery which uses the material
INVENTOR(S): Chang, Shou-Bin; Kuba, Kanji; Watarai, Yusuke
PATENT ASSIGNEE(S): Mitsubishi Materials Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004335334 | A2 | 20041125 | JP 2003-131274 | 20030509 |

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PRIORITY APPLN. INFO.: JP 2003-131274 20030509

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AB The anode material comprises composite **particles**, having ceramics coated on a part or whole part of mineral **particles** which are capable of intercalating/decalating Li+; where the mineral **particles** contain Si, Sn and/or Zn as constituent element; and the ceramics are composed of an oxide, a nitride, or a carbide, which contains Si, Ti, Al and/or Zr. The anode material is manufd. by prepg. 0.02-20 μm av. **particle** sized mineral **particles**, comprising ≥1 substance selected from Si, metal silicide, B doped Si, P doped Si, Zn, Sn, Zn contg. solid soln., Sn contg. solid soln., Zn contg. intermetallic compds., and Sn contg. intermetallic compds.; mixing the mineral **particles** with a precursor org. mol. soln., contg. Si, Ti, Al and/or Zr; gelatinizing the mixt. by hydrolysis reaction and dehydrative polycondensation; firing the gel mixt. in a nonoxidative atm. at 600-1300° for 0.5-3 h to form composite **particles** which have the ceramics coated on a part or whole part of the mineral **particles**. The battery uses the above material as an anode active mass.

IT **12019-69-1**
RL: DEV (Device component use); USES (Uses)
(manuf. of **anode** materials contg. ceramics coated mineral **particle** for secondary **batteries**)
RN 12019-69-1 HCAPLUS
CN Copper, compd. with tin (6:5) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 6 | 7440-50-8 |
| Sn | 5 | 7440-31-5 |

IC ICM H01M004-38
ICS H01M004-02; H01M004-62; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary battery anode mineral ceramics composite **particle** manuf
IT Battery anodes
Secondary batteries
(manuf. of anode materials contg. ceramics coated mineral **particle** for secondary batteries)
IT 1344-28-1, Alumina, uses 7440-21-3, Silicon, uses 7440-21-3D, Silicon, B doped 7440-21-3D, Silicon, P doped **12019-69-1** 12688-08-3, Carbon titanium oxide 39345-87-4, Silicon carbide

oxide 171089-01-3, Iron silicide (Fe0.2Si0.8)
RL: DEV (Device component use); USES (Uses)
(manuf. of **anode** materials contg. ceramics coated mineral **particle** for secondary **batteries**)

L41 ANSWER 8 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:963598 HCAPLUS
DOCUMENT NUMBER: 141:413558
TITLE: anode active material for nonaqueous electrolyte secondary battery
INVENTOR(S): Nakamoto, Takayuki; Bito, Yasuhiko
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004319469 | A2 | 20041111 | JP 2004-109346 | 20040401 <-- |
| US 2004241548 | A1 | 20041202 | US 2004-816221 | 20040402 <-- |
| PRIORITY APPLN. INFO.: | | | JP 2003-99523 A | 20030402 <-- |

AB The anode active material consists of an inner layer contg. alloys and a surface layer of Si or Sn oxide and having an av. thickness of 0.2-1000 nm. The alloy is selected from combinations of Si or Sn with Ti, Co, Ni, Cu, Mg, Zr, V, Mo, W, Mn, and Fe. The product has high Li absorption and low reaction resistance.
IT **12297-65-3 134807-88-8**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**anode** active material for nonaq. electrolyte secondary **battery**)
RN 12297-65-3 HCAPLUS
CN Cobalt, compd. with tin (1:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 134807-88-8 HCAPLUS
CN Cobalt, compd. with tin (1:3) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 3 | 7440-31-5 |

IC ICM H01M004-38
ICS H01M004-02; H01M004-48; H01M010-40
CC 52-1 (**Electrochemical**, Radiational, and Thermal Energy

Technology)
Section cross-reference(s): 55
IT 12039-83-7, Titanium silicide (TiSi2) 12163-70-1, Molybdenum silicide (MoSi3) 12166-63-1 **12297-65-3** 12504-63-1, Titanium silicide (TiSi3) 39424-47-0, Magnesium silicide (MgSi) 65453-90-9 67725-23-9, Tungsten silicide (WSi3) 73588-36-0 81827-65-8, Zirconium silicide (ZrSi3) 90157-89-4, Nickel silicide (NiSi3) 90157-90-7, Vanadium silicide (VSi3) 90157-92-9, Cobalt silicide (CoSi3) 90157-93-0, Iron silicide (FeSi3) 90157-94-1, Copper silicide (CuSi3) 134776-39-9 **134807-88-8** 210885-35-1 274673-54-0 644986-47-0, Manganese silicide (MnSi3) 791838-52-3 791838-53-4 791838-55-6 791838-56-7 791838-57-8 791838-59-0, Cobalt nickel silicide (Co0.5Ni0.5Si3) 791838-60-3
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**anode** active material for nonaq. electrolyte secondary **battery**)

L41 ANSWER 9 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:609447 HCAPLUS
DOCUMENT NUMBER: 141:143222
TITLE: Anode material for secondary nonaqueous lithium battery, the anode, and the battery
INVENTOR(S): Senna, Tamotsu; Uono, Hiroyuki; Kim, Dae-Che; Fuse, Toru
PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004213927 | A2 | 20040729 | JP 2002-379298 | 20021227 |

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PRIORITY APPLN. INFO.: JP 2002-379298 20021227

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AB The anode material contains a carbonaceous material, a graphitic material, and nanosize metal particles, selected from Ag, Zn, Al, Ga, In, Si, Ge, Sn, and Pb, having av. diam. 10-200 nm at 3-20% of the total anode material wt.
IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(carbonaceous and graphitic **anode** materials contg. nanosize metal **particles** for secondary lithium **batteries**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-58
ICS H01M004-02; H01M004-04; H01M004-38; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7440-21-3,

Silicon, uses 7440-22-4, Silver, uses **7440-31-5**, Tin, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-74-6, Indium, uses 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(carbonaceous and graphitic **anode** materials contg. nanosize metal **particles** for secondary lithium **batteries**)

L41 ANSWER 10 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:530400 HCAPLUS
DOCUMENT NUMBER: 141:91791
TITLE: Secondary nonaqueous electrolyte battery
INVENTOR(S): Nishino, Takatomo; Fujino, Takemasa; Inoue, Hiroshi
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004186035 | A2 | 20040702 | JP 2002-352868 | 200212 04 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2002-352868 | 200212 04 |
| | | | <-- | |

AB The battery has a Li intercalating alloy contg. ≥2 of B, Al, Ga, In, Si, Ge, Sn, Pb, Ca, Sc, Ti, V, Cr, Mn, Fe,Co, Ni, Cu, and Zn as active mass for its anode; a Li intercalating cathode; and a electrolyte soln. contg. an electrolyte salt and a nonaq. solvent; where the anode contains a nonionic surfactant at ≤0.7% the wt. of the anode active mass. The surfactant is selected from polyoxyethylene alkyl ether HO(CH2CH2O)n(CH2)mCH3 and polyoxyethylene alkylphenyl ether.
IT **88872-71-3**
RL: DEV (Device component use); USES (Uses)
(**anodes** contg. nonionic surfactants for secondary lithium **batteries**)
RN 88872-71-3 HCAPLUS
CN Tin alloy, base, Sn 70,Co 30 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 70 | 7440-31-5 |
| Co | 30 | 7440-48-4 |

IC ICM H01M004-02
ICS H01M004-38; H01M004-62; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT **88872-71-3** 95079-63-3 146660-28-8 663618-38-0 716378-63-1 716378-64-2
RL: DEV (Device component use); USES (Uses)
(**anodes** contg. nonionic surfactants for secondary lithium **batteries**)

L41 ANSWER 11 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:530340 HCAPLUS
DOCUMENT NUMBER: 141:91776
TITLE: Electrode material for secondary nonaqueous electrolyte battery, the electrode, and the battery
INVENTOR(S): Sawa, Takao; Kono, Tatsuoki; Matsuno, Shinsuke; Takami, Norio
PATENT ASSIGNEE(S): Toshiba Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004185881 | A2 | 20040702 | JP 2002-349197 | 200211 29 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2002-349197 | 200211 29 |
| | | | <-- | |

AB The material is represented as SnaCobMcTdXe or Sna(Co1-yFey)bMcTdXe(M = Ni, Cu, Mn, V, and/or Cr; T = Ti, Zr, Hf, Nb, Ta, Mo, W, and/or rare earth elements; X = Si, Al, Sb, and/or In; a+b+c+d+e = 100; a = 40-50; b = 35-55; c = 0-20; d = 0-10; e = 0-20; 0< yr≤ 0.8) and comprises an alloy, contg. a hexagonal structured crystal phase. The battery has an anode contg. the above mat, a cathode, and a nonaq. electrolyte.

IT **12297-65-3 12526-67-9**
RL: DEV (Device component use); USES (Uses)
(compns. of **anode** materials contg. cobalt tin composite alloys for secondary **batteries**)

RN 12297-65-3 HCAPLUS
CN Cobalt, compd. with tin (1:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 12526-67-9 HCAPLUS
CN Cobalt, compd. with tin (3:2) (7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 3 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

IC ICM H01M004-38
ICS C22C013-00; C22C019-07; H01M004-02; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl carbonate 12023-00-6 12190-79-3, Cobalt lithium oxide (CoLiO2) **12297-65-3** 12526-60-2 12526-62-4 12526-63-5 12526-64-6 **12526-67-9** 12794-61-5 21324-40-3, Lithium hexafluorophosphate 109118-19-6 110445-75-5 110445-81-3 716378-22-2 716378-24-4 716378-27-7 716378-31-3 716378-33-5 716378-34-6 716378-35-7 716378-36-8 716378-37-9 716378-38-0

716378-39-1 716378-40-4 716378-41-5 716378-42-6 716378-43-7
716378-44-8 716378-45-9 716378-46-0 716378-47-1 716378-48-2
716378-49-3 716378-50-6 716378-51-7 716378-52-8 716378-53-9
716378-54-0 716378-55-1 716378-56-2 716378-57-3 716378-58-4
RL: DEV (Device component use); USES (Uses)
(compns. of **anode** materials contg. cobalt tin composite alloys for secondary **batteries**)

L41 ANSWER 12 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:494059 HCAPLUS
DOCUMENT NUMBER: 141:57045
TITLE: Anode for secondary nonaqueous electrolyte battery, its manufacture, and the battery
INVENTOR(S): Musha, Shinichi; Honda, Hitohiko; Sakaguchi, Yoshiki; Yasuda, Kiyotaka; Modeki, Akihiro; Matsushima, Tomoyoshi; Taguchi, Takeo; Taniguchi, Kazuko; Dobashi, Makoto
PATENT ASSIGNEE(S): Mitsui Mining & Smelting Co., Ltd., Japan
SOURCE: PCT Int. Appl., 80 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2004051768 | A1 | 20040617 | WO 2003-JP15044 | 200311 25 |
| | | | <-- | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| JP 2004241329 | A2 | 20040826 | JP 2003-31636 | 200302 07 |
| | | | <-- | |
| JP 2004228059 | A2 | 20040812 | JP 2003-105797 | 200304 09 |
| | | | <-- | |
| JP 3750117 | B2 | 20060301 | | |
| JP 2005044672 | A2 | 20050217 | JP 2003-278615 | 200307 23 |
| | | | <-- | |
| JP 3643108 | B2 | 20050427 | | |
| JP 2005063767 | A2 | 20050310 | JP 2003-290726 | 200308 08 |
| | | | <-- | |
| JP 2005129264 | A2 | 20050519 | JP 2003-360938 | 200310 21 |
| | | | <-- | |

| | | | | |
|---|---|---|---|---|
| AU 2003302519 | A1 | 20040623 | AU 2003-302519 | 200311 25 |
| | | | <-- | |
| BR 2003015457 | A | 20050823 | BR 2003-15457 | 200311 25 |
| | | | <-- | |
| EP 1566855 | A1 | 20050824 | EP 2003-812300 | 200311 25 |
| | | | <-- | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| US 2005208379 | A1 | 20050922 | US 2005-28735 | 200501 05 |
| | | | <-- | |
| US 2006051675 | A1 | 20060309 | US 2005-529487 | 200503 28 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2002-348990 A | 200211 29 |
| | | | <-- | |
| | | | JP 2003-31636 A | 200302 07 |
| | | | <-- | |
| | | | JP 2003-105797 A | 200304 09 |
| | | | <-- | |
| | | | JP 2003-278615 A | 200307 23 |
| | | | <-- | |
| | | | JP 2003-290726 A | 200308 08 |
| | | | <-- | |
| | | | JP 2003-360938 A | 200310 21 |
| | | | <-- | |
| | | | WO 2003-JP15044 W | 200311 25 |
| | | | <-- | |

AB The anode has an active mass structure, contg. a conductive material having low capability of forming a compd. with Li, on 1 or both sides of a collector; where the active mass structure comprises 5-80 % active mass **particles** contg. a material having high capability forming a compd. with Li. The anode is manufd. by applying a slurry contg. the active mass **particles**, a conductive carbonaceous material, a binder, and a dild. solvent on a collector followed by drying to form an active mass layer; and coating the material having low capability of forming the Li compd. on the active mass layer by electroplating, sputtering, chem. vapor deposition, or chem. vapor deposition to form a surface coating layer. The battery has the above anode.

IT **55918-93-9 60225-00-5 76297-68-2**
RL: DEV (Device component use); USES (Uses)
(manuf. of **anodes** contg. coating layers for secondary

lithium **batteries**)
RN 55918-93-9 HCAPLUS
CN Tin alloy, base, Sn 60,Cu 40 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 60 | 7440-31-5 |
| Cu | 40 | 7440-50-8 |

RN 60225-00-5 HCAPLUS
CN Tin alloy, base, Sn 90,Cu 10 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 90 | 7440-31-5 |
| Cu | 10 | 7440-50-8 |

RN 76297-68-2 HCAPLUS
CN Tin alloy, base, Sn 75,Cu 25 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 75 | 7440-31-5 |
| Cu | 25 | 7440-50-8 |

IC ICM H01M004-02
ICS H01M004-38; H01M004-64; H01M004-04; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 7440-02-0, Nickel, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 12645-63-5 24937-79-9, PVDF 37316-10-2 39451-99-5 **55918-93-9** 57655-76-2 **60225-00-5** **76297-68-2** 79933-53-2 84444-80-4 96208-32-1 109166-32-7, Silicon carbide (Si0.63C0.37) 109166-36-1, Silicon carbide (Si0.39C0.61) 109166-37-2, Silicon carbide (Si0.22C0.78) 126603-77-8, Silicon carbide (Si0.1C0.9) 129827-29-8 166259-81-0 172173-80-7 194346-72-0 207685-67-4 217076-77-2 705252-93-3 705252-94-4 705252-95-5 705252-96-6 705252-97-7 705252-98-8 705252-99-9 705253-00-5 705253-01-6 705253-02-7 705253-03-8 705253-04-9 705253-05-0 705253-06-1 705253-07-2 705253-08-3 705253-09-4 705253-10-7 705253-11-8
RL: DEV (Device component use); USES (Uses)
(manuf. of **anodes** contg. coating layers for secondary lithium **batteries**)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 13 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:430075 HCAPLUS
DOCUMENT NUMBER: 140:409668
TITLE: Anode with current collector having converted tin alloy coating for secondary lithium battery
INVENTOR(S): Kashima, Hajime; Maki, Fumihiko
PATENT ASSIGNEE(S): Nihon Kagaku Sangyo Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| JP 2004152564 | A2 | 20040527 | JP 2002-315351 | 200210 30 |

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PRIORITY APPLN. INFO.: JP 2002-315351 200210 30

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AB The claimed anode is equipped with a Sn or Sn alloy coating formed on a current collector, where the coating is converted by heat treatment to give an alloy phase, free from a Sn phase, of the Sn or the Sn alloy-forming metal with a current-collector metal, e.g., Cu. The resulting battery provides high energy d. and long cycle life.

IT **190371-00-7**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(plating; **anode** with copper current collector having converted tin alloy coating for secondary lithium **battery** )

RN 190371-00-7 HCAPLUS

CN Tin alloy, base, Sn 93,Co 7 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 93 | 7440-31-5 |
| Co | 7 | 7440-48-4 |

IC ICM H01M004-02
ICS H01M004-38; H01M004-64; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 7440-31-5, Tin, processes 11110-83-1 12668-36-9 37292-50-5
**190371-00-7**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(plating; **anode** with copper current collector having converted tin alloy coating for secondary lithium **battery** )

L41 ANSWER 14 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:291704 HCAPLUS

DOCUMENT NUMBER: 140:306770

TITLE: Anode material containing Group 14 element and secondary lithium battery

INVENTOR(S): Nishino, Takatomo; Inoue, Hiroshi

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004111151 | A2 | 20040408 | JP 2002-270367 | 200209 17 |

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PRIORITY APPLN. INFO.: JP 2002-270367 200209 17

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AB The claimed material consists of **particles** contg. ≥1 of Group 14 elements excluding C, where the **particle** satisfies its circumscribing rectangular parallelepiped having 3 side length A, B, and C showing A ≤ B ≤ C and C/A 2-12. Optionally, the material contains Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, B, Al, Ga, In, and/or Ag. The battery equipped with an anode contg. the irregular shaped **particles** provides high charging-discharging characteristics and long cycle life.

IT **95079-63-3 663618-37-9**
RL: DEV (Device component use); USES (Uses)
(**anode** contg. irregular shaped **particles** contg. Group 14 element for secondary **battery**)

RN 95079-63-3 HCAPLUS
CN Copper alloy, base, Cu 55,Sn 45 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Cu | 55 | 7440-50-8 |
| Sn | 45 | 7440-31-5 |

RN 663618-37-9 HCAPLUS
CN Tin alloy, base, Sn 69,Co 31 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 69 | 7440-31-5 |
| Co | 31 | 7440-48-4 |

IC ICM H01M004-58
ICS H01M004-02; H01M006-16; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST anode Group 14 element **particle** shape secondary lithium battery

IT Battery anodes
(anode contg. irregular shaped **particles** contg. Group 14 element for secondary battery)

IT Secondary batteries
(lithium; anode contg. irregular shaped **particles** contg. Group 14 element for secondary battery)

IT **95079-63-3** 201856-05-5 **663618-37-9** 663618-38-0
RL: DEV (Device component use); USES (Uses)
(**anode** contg. irregular shaped **particles** contg. Group 14 element for secondary **battery**)

IT 7429-90-5, Aluminum, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-20-2, Scandium, uses 7440-22-4, Silver, uses 7440-32-6, Titanium, uses 7440-42-8, Boron, uses 7440-47-3, Chromium, uses 7440-55-3, Gallium, uses 7440-62-2, Vanadium, uses 7440-66-6, Zinc, uses
RL: DEV (Device component use); USES (Uses)
(anode contg.; anode contg. irregular shaped **particles** contg. Group 14 element for secondary battery)

L41 ANSWER 15 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:291703 HCAPLUS
DOCUMENT NUMBER: 140:324164
TITLE: Anode active mass containing carbon composite and secondary lithium battery using it
INVENTOR(S): Nishino, Takatomo; Tanizaki, Hiroaki; Inoue, Hiroshi
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004111150 | A2 | 20040408 | JP 2002-270366 | 20020917 |
| JP 3734169 | B2 | 20060111 | | |
| US 2004131938 | A1 | 20040708 | US 2003-664446 | 20030918 |

PRIORITY APPLN. INFO.: JP 2002-270366 A 20020917

AB The claimed active mass comprises a composite carbonaceous material obtained by adding shear force under compression on at least a partial surface of a base material contg. Group 14 elements excluding C. Optionally, the base material contains Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, B, Al, Ga, In, and/or Ag. The battery equipped with an anode contg. the active mass provides high capacity and long cycle life.

IT **88872-71-3**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(composites; **anode** contg. Group 14 element-carbon composite for secondary **battery**)

RN 88872-71-3 HCAPLUS
CN Tin alloy, base, Sn 70,Co 30 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 70 | 7440-31-5 |
| Co | 30 | 7440-48-4 |

IC ICM H01M004-58
ICS H01M004-02; H01M006-16; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT **88872-71-3** 95079-63-3 201856-16-8 663618-38-0 677309-38-5
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(composites; **anode** contg. Group 14 element-carbon composite for secondary **battery**)

L41 ANSWER 16 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:252059 HCAPLUS
DOCUMENT NUMBER: 140:256344
TITLE: Battery anode compositions having an elastomeric binder and an adhesion promoter
INVENTOR(S): Christensen, Leif
PATENT ASSIGNEE(S): 3M Innovative Properties Company, USA
SOURCE: U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| US 2004058240 | A1 | 20040325 | US 2002-251067 | 200209<br>20 |
| | | | <-- | |
| CA 2498901 | AA | 20040401 | CA 2003-2498901 | 200308<br>20 |
| | | | <-- | |
| WO 2004027898 | A2 | 20040401 | WO 2003-US26138 | 200308<br>20 |
| | | | <-- | |
| WO 2004027898 | A3 | 20050127 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| AU 2003258306 | A1 | 20040408 | AU 2003-258306 | 200308<br>20 |
| | | | <-- | |
| EP 1547171 | A2 | 20050629 | EP 2003-797859 | 200308<br>20 |
| | | | <-- | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| JP 2006500738 | T2 | 20060105 | JP 2004-537679 | 200308<br>20 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | US 2002-251067 A | 200209<br>20 |
| | | | <-- | |
| | | | WO 2003-US26138 W | 200308<br>20 |
| | | | <-- | |

AB An anode compn. is disclosed that includes an elastomeric polymer binder, a plurality of electrochem. active metal particles dispersed in the binder, an elec. conductive diluent, and an adhesion promoter that promotes adhesion among the particles, the diluent, and the binder. Also featured are lithium ion batteries featuring anodes made from these compns.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(**particles; battery anode** compns.
having elastomeric binder and adhesion promoter)

RN 7440-31-5 HCAPLUS

CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-62
INCL 429217000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39, 56
IT 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses **7440-31-5**, Tin, uses 7440-36-0, Antimony, uses 7440-43-9, Cadmium, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses
RL: DEV (Device component use); USES (Uses)
(**particles**; **battery anode** compns. having elastomeric binder and adhesion promoter)

L41 ANSWER 17 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:250487 HCAPLUS
DOCUMENT NUMBER: 140:273575
TITLE: Anode active mass for secondary nonaqueous electrolyte battery and its manufacture
INVENTOR(S): Takeshita, Yukiteru; Kohiyori, Motoji; Nagata, Tatsuo; Uenaka, Hideya; Higashida, Yasuto
PATENT ASSIGNEE(S): Sumitomo Metal Industries Ltd., Japan; Matsushita Electric Industrial Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004095469 | A2 | 20040325 | JP 2002-257810 | 20020903 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2002-257810 | 20020903 |
| | | | <-- | |

AB The anode active mass is a mech. ground material, having ≥1 Li reacting active phase and ≥1 inert phase contg. ≥1 elements selected from Group IIA, transition metal, Group IIIA, and Group IVA elements; where the peak intensity of ≥1 of the active phase in the x ray diffraction pattern is ≤50% its intensity before the grinding. The active mass is prepd. by mech. grinding a mixt. of the active and inert phases, without changing the percentage of the phases during the grinding.
IT **190664-12-1**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(compns. and manuf. of mech. ground **anode** active mass contg. active and inert phases for secondary lithium **batteries**)
RN 190664-12-1 HCAPLUS
CN Tin alloy, base, Sn 87,Co 13 (9CI) (CA INDEX NAME)

Component Component Component

| | Percent | Registry Number |
|---|---|---|
| Sn | 87 | 7440-31-5 |
| Co | 13 | 7440-48-4 |

IC ICM H01M004-38
ICS B22F001-00; B22F009-04; H01M004-02; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 11148-21-3 60866-77-5D, Silicon phosphide, co with silicon 139530-68-0 **190664-12-1** 216682-78-9 216682-84-7 367926-48-5 371921-04-9 403620-04-2 674336-67-5 674336-68-6 674336-69-7 674336-71-1 674336-73-3
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(compns. and manuf. of mech. ground **anode** active mass contg. active and inert phases for secondary lithium **batteries**)

L41 ANSWER 18 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:232615 HCAPLUS
DOCUMENT NUMBER: 141:108740
TITLE: Nanosized LixCu6Sn5B **particles** prepared by borohydride reduction for secondary lithium batteries
AUTHOR(S): Mladenov, M.; Zlatilova, P.; Lefterova, E.; Dragieva, I.
CORPORATE SOURCE: CLEPS, BAS, Sofia, 1113, Bulg.
SOURCE: Journal of the University of Chemical Technology and Metallurgy (**2003**), 38(2), 529-534
CODEN: JUCTB3; ISSN: 1311-7629
PUBLISHER: University of Chemical Technology and Metallurgy
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The electrochem. characteristics of Sn alloys, used in battery anodes, depend on the structure and size of the constituent **particles.** The synthesis of nanoparticles of Cu6Sn5 through borohydride redn. was studied and the optimum ratio between the concns. of the precursor metal salts used in the synthesis was established. Changes in the phase compn. of the alloy after electrochem. interaction were obsd. Cycling tests of model electrodes in Li-ion batteries indicated a higher discharge capacity (200 mA-h/g) for electrodes with the nanosized Cu-Sn alloy than for electrodes with pure nanosized Sn. Cycling stability was tested over 70 cycles and the nanosized composite material, CuxSny, showed good cycling stability. The main constituent in the **particles** is the intermetallic compd., LixCu6Sn5, synthesized using a complex-forming agent in the precursor salt soln. The electrochem. lithiation of this alloy entails displacement of Cu from the alloy and subsequent interaction of the Li with the Sn to form the phase Li4.4Sn.
IT **12787-61-0P**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(nanosized **particles** prepd. through borohydride redn. for **anodes** of lithium **batteries**)
RN 12787-61-0 HCAPLUS
CN Tin alloy, base, Sn 61,Cu 39 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 61 | 7440-31-5 |
| Cu | 39 | 7440-50-8 |

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Lithiation
(electrochem.; of nanosized Cu6Sn5 **particles** prepd. through borohydride redn. for anodes of lithium batteries)
IT Secondary batteries
(lithium; nanosized LixCu6Sn5B **particles** prepd. through borohydride redn. for anodes of lithium batteries)
IT Battery anodes
Nanoparticles
(nanosized LixCu6Sn5B **particles** prepd. through borohydride redn. for anodes of lithium batteries)
IT 719293-19-3, Copper lithium tin boride
RL: DEV (Device component use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
(nanosized LixCu6Sn5B **particles** prepd. through borohydride redn. for anodes of lithium batteries)
IT **12787-61-0P** 581103-55-1P
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(nanosized **particles** prepd. through borohydride redn. for **anodes** of lithium **batteries**)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 19 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:219896 HCAPLUS
DOCUMENT NUMBER: 140:238516
TITLE: Battery using anode material including tin
INVENTOR(S): Tanizaki, Hiroaki; Omaru, Atsuo
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| US 2004053131 | A1 | 20040318 | US 2003-664683 | 20030918 |
| JP 2004111202 | A2 | 20040408 | JP 2002-271710 | 20020918 |
| JP 3755506 | B2 | 20060315 | | |
| CN 1495941 | A | 20040512 | CN 2003-164820 | 20030918 |

PRIORITY APPLN. INFO.: JP 2002-271710 A 20020918

AB Provided is a battery with a higher capacity and superior charge-discharge cycle characteristics. A cathode contained in a package can and an anode contained in a package cup are laminated with a separator in between. The separator is impregnated with an electrolyte soln. formed by dissolving lithium salt in a solvent. The anode comprises a tin-contg. material including metallic tin and an intermetallic compd. including tin in the same **particle**

. A higher capacity and superior charge-discharge cycles can be obtained by the tin-contg. material.

IT **12019-61-3 12019-69-1 12297-65-3 12394-61-5 12526-67-9**
RL: DEV (Device component use); USES (Uses)
(**battery** using **anode** material including tin)

RN 12019-61-3 HCAPLUS
CN Copper, compd. with tin (3:1) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 3 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

RN 12019-69-1 HCAPLUS
CN Copper, compd. with tin (6:5) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 6 | 7440-50-8 |
| Sn | 5 | 7440-31-5 |

RN 12297-65-3 HCAPLUS
CN Cobalt, compd. with tin (1:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 12394-61-5 HCAPLUS
CN Cobalt, compd. with tin (1:2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

RN 12526-67-9 HCAPLUS
CN Cobalt, compd. with tin (3:2) (7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 3 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

IT **12682-91-6P 55918-93-9P 62186-40-7P 67828-86-8P 70797-67-0P 83746-47-8P 260805-53-6P**
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**battery** using **anode** material including tin)

RN 12682-91-6 HCAPLUS
CN Tin alloy, base, Sn 62,Cu 38 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 62 | 7440-31-5 |
| Cu | 38 | 7440-50-8 |

RN 55918-93-9 HCAPLUS
CN Tin alloy, base, Sn 60,Cu 40 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 60 | 7440-31-5 |
| Cu | 40 | 7440-50-8 |

RN 62186-40-7 HCAPLUS
CN Copper alloy, base, Cu 50,Sn 50 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Cu | 50 | 7440-50-8 |
| Sn | 50 | 7440-31-5 |

RN 67828-86-8 HCAPLUS
CN Tin alloy, base, Sn 80,Co 20 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 80 | 7440-31-5 |
| Co | 20 | 7440-48-4 |

RN 70797-67-0 HCAPLUS
CN Tin alloy, base, Sn 82,Co 18 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 82 | 7440-31-5 |
| Co | 18 | 7440-48-4 |

RN 83746-47-8 HCAPLUS
CN Tin alloy, base, Sn 65,Co 35 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 65 | 7440-31-5 |
| Co | 35 | 7440-48-4 |

RN 260805-53-6 HCAPLUS
CN Tin alloy, base, Sn 73,Co 27 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 73 | 7440-31-5 |
| Co | 27 | 7440-48-4 |

IC ICM H01M004-38
ICS H01M004-62; H01M004-48
INCL 429218100; 429232000; 429231100
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT 7440-31-5, Tin, uses **12019-61-3 12019-69-1** 12023-00-6 12023-01-7 **12297-65-3 12394-61-5 12526-67-9**
RL: DEV (Device component use); USES (Uses)
(**battery** using **anode** material including tin)
IT **12682-91-6P 55918-93-9P 62186-40-7P**

**67828-86-8P 70797-67-0P** 70993-37-2P
**83746-47-8P** 102984-63-4P 146660-29-9P 252231-06-4P
**260805-53-6P**
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**battery** using **anode** material including tin)

L41 ANSWER 20 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:180589 HCAPLUS
DOCUMENT NUMBER: 140:202475
TITLE: Anode active mass, its manufacture, and secondary nonaqueous electrolyte battery
INVENTOR(S): Nishino, Takatomo; Tanizaki, Hiroaki; Inoue, Hiroshi
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004071391 | A2 | 20040304 | JP 2002-230136 | 20020807 <-- |
| JP 3624417 | B2 | 20050302 | | |
| US 2004091775 | A1 | 20040513 | US 2003-629419 | 20030729 <-- |
| US 6835226 | B2 | 20041228 | | |
| PRIORITY APPLN. INFO.: | | | JP 2002-230136 A | 20020807 <-- |

AB The active mass is prepd. by mech. treating an alloy powder which contains ≥1 element selected from group 13-14 elements (excluding C and Tl). Another type of is prepd. by mech. alloying a power raw material, which contains ≥1 element selected from group 13-14 elements (excluding C and Tl), at a reaction temp. ≤90°. The battery has an anode, contg. the above anode active mass; a cathode, contg. a Li compd. as cathode active mass; and a nonaq. electrolyte soln.
IT **663618-37-9P**
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(manuf. of **anode** active mass contg. alloys of group 13-14 elements for secondary **batteries**)
RN 663618-37-9 HCAPLUS
CN Tin alloy, base, Sn 69,Co 31 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 69 | 7440-31-5 |
| Co | 31 | 7440-48-4 |

IC ICM H01M004-38
ICS H01M004-02; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7439-93-2P, Lithium, uses 95079-63-3P 146660-28-8P

**663618-37-9P** 663618-38-0P 663618-39-1P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(manuf. of **anode** active mass contg. alloys of group 13-14 elements for secondary **batteries**)

L41 ANSWER 21 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:98078 HCAPLUS
DOCUMENT NUMBER: 140:131153
TITLE: Battery electrode
INVENTOR(S): Ikeda, Konosuke; Tanabe, Katsuhisa; Murakami, Toru
PATENT ASSIGNEE(S): Uemura Kogyo Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004039427 | A2 | 20040205 | JP 2002-194453 | 20020703 |

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PRIORITY APPLN. INFO.: JP 2002-194453 20020703

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AB The electrode, esp for a secondary lithium battery anode, comprises a 3-dimensional net substrate; a 1st plating layer on the substrate; and a 2nd plating layer, having a compn. different from that of the 1st plating layer, on the 1st plating layer; and has a free vol. of 1-15%.
IT **39286-52-7**
RL: DEV (Device component use); USES (Uses)
(2nd plating layer; **anodes** contg. plating coatings on 3-dimensional net substrates with controlled free vol. for secondary lithium **batteries**)
RN 39286-52-7 HCAPLUS
CN Cobalt alloy, nonbase, Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

IC ICM H01M004-02
ICS H01M004-80; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7440-31-5, Tin, uses **39286-52-7**
RL: DEV (Device component use); USES (Uses)
(2nd plating layer; **anodes** contg. plating coatings on 3-dimensional net substrates with controlled free vol. for secondary lithium **batteries**)

L41 ANSWER 22 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:78041 HCAPLUS
DOCUMENT NUMBER: 140:114272
TITLE: Secondary battery
INVENTOR(S): Takeuchi, Yoshiaki; Inoue, Hiroshi
PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2004031217 | A2 | 20040129 | JP 2002-188039 | 20020627 |

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PRIORITY APPLN. INFO.: JP 2002-188039 20020627

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AB The battery has a coiled stack contg. an electrolyte between a cathode and an anode having a pair of opposed collectors and an active mass layer on the collector; where the anode active mass contains **particles** selected from a Li-intercalating metal, a metalloid, an alloy, and/or a compd., and the free vol. of the anode active mass in the coil center side is larger than in the coil outer side before initial charging.

IT **12668-36-9**
RL: DEV (Device component use); USES (Uses)
(secondary **batteries** contg. **anode** active mass with controlled free vol. distribution for improved cycle life)

RN 12668-36-9 HCAPLUS
CN Copper alloy, nonbase, Cu,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Cu | 7440-50-8 |
| Sn | 7440-31-5 |

IC ICM H01M004-02
ICS H01M004-38; H01M004-58; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **12668-36-9**
RL: DEV (Device component use); USES (Uses)
(secondary **batteries** contg. **anode** active mass with controlled free vol. distribution for improved cycle life)

L41 ANSWER 23 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:735270 HCAPLUS
DOCUMENT NUMBER: 139:263296
TITLE: Secondary nonaqueous electrolyte battery without anode deformation or electrolytic solution maldistribution and its manufacture
INVENTOR(S): Nakamoto, Takayuki; Nanai, Norishige; Bito, Yasuhiko; Kasamatsu, Shinji; Nitta, Yoshiaki
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2003263979 | A2 | 20030919 | JP 2002-66651 | |

200203
12
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PRIORITY APPLN. INFO.: JP 2002-66651
200203
12
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AB In manufg. the battery, an anode is formed by filling an anode active substance with av. **particle** size d 0.5-50 μm into a current collector having continuous pores, sp. surface area 0.002-0.06 m2/g, and porosity 60-97%. In the obtained anode, 10-25 vol.% of the continuous pores are filled with the active substance, and the rate of the bonding area between the active substance and the current collector to the surface area of the active substance is 5-40%. Since deformation of anode or maldistribution of an electrolytic soln. during charging and discharging is prevented, the battery has high capacity and long cycle life.

IT **12787-61-0**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**anode** active substance; manuf. of nonaq. electrolyte **battery** without **anode** deformation or electrolytic soln. maldistribution for high capacity and long cycle life)

RN 12787-61-0 HCAPLUS
CN Tin alloy, base, Sn 61,Cu 39 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 61 | 7440-31-5 |
| Cu | 39 | 7440-50-8 |

IC ICM H01M004-02
ICS H01M004-38; H01M004-66; H01M004-80; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT 7440-21-3, Silicon, uses 7440-31-5, Tin, uses **12787-61-0** 57952-74-6
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**anode** active substance; manuf. of nonaq. electrolyte **battery** without **anode** deformation or electrolytic soln. maldistribution for high capacity and long cycle life)

L41 ANSWER 24 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:730892 HCAPLUS
DOCUMENT NUMBER: 140:131895
TITLE: Charge-discharge characteristics of tin and tin-cobalt alloy plating anodes for advanced lithium secondary batteries
AUTHOR(S): Sonoda, Tsukasa; Sakai, Tetsuo
CORPORATE SOURCE: Hyogo Prefectural Institute of Technology, Suma-ku, Kobe-shi, Hyogo, 654-0037, Japan
SOURCE: Hyomen Gijutsu (**2003**), 54(7), 492-493
CODEN: HYGIEX; ISSN: 0915-1869
PUBLISHER: Hyomen Gijutsu Kyokai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB The effect of Co content of cyclic voltammograms and charge-discharge cycle characteristic was studied by using Sn-Co alloy plating anodes for Li secondary batteries. The film with a Co content of 4.3% demonstrated excellent charge-discharge cycle

characteristic.
IT **57886-64-3 648940-36-7**
RL: DEV (Device component use); USES (Uses)
(charge-discharge characteristics of tin and tin-cobalt alloy plating **anodes** for advanced lithium secondary **batteries**)
RN 57886-64-3 HCAPLUS
CN Tin alloy, base, Sn,Co (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Sn | 7440-31-5 |
| Co | 7440-48-4 |

RN 648940-36-7 HCAPLUS
CN Tin alloy, base, Sn 96,Co 4.3 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 96 | 7440-31-5 |
| Co | 4.3 | 7440-48-4 |

CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): **52**
IT **57886-64-3 648940-36-7**
RL: DEV (Device component use); USES (Uses)
(charge-discharge characteristics of tin and tin-cobalt alloy plating **anodes** for advanced lithium secondary **batteries**)

L41 ANSWER 25 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:675725 HCAPLUS
DOCUMENT NUMBER: 139:182901
TITLE: Anode active mass, secondary nonaqueous electrolyte battery, and their manufacture
INVENTOR(S): Mizutani, Satoshi; Komaru, Atsuo; Nishino, Takatomo
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2003242972 | A2 | 20030829 | JP 2002-43625 | 20020220 <-- |
| PRIORITY APPLN. INFO.: | | | JP 2002-43625 | 20020220 <-- |

AB The anode active mass is particles of active mass, contg. transition metal(s) or Group 12-15 element(s) except C, coated with Co, Fe, Pd, Pt, Ni, Cu, Sn, Cr, Zn and/or their alloy; where the coating covers ≥5% of the total particle surface and weighs 0.01-70% of the total mass. The battery uses the anode active mass for its anode. The anode active mass and the battery are prepd. by coating the active mass particles with the metal (alloy) layer.
IT **7440-31-5**, Tin, uses

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(compns. and structure and manuf. of metal and alloy coated **anode** active mass **particles** for secondary lithium **batteries**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-38
ICS H01M004-02; H01M004-04; H01M004-62; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7440-02-0, Nickel, uses **7440-31-5**, Tin, uses 7440-50-8, Copper, uses
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(compns. and structure and manuf. of metal and alloy coated **anode** active mass **particles** for secondary lithium **batteries**)

L41 ANSWER 26 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:586641 HCAPLUS
DOCUMENT NUMBER: 139:119947
TITLE: Anode for secondary battery and the battery using the anode
INVENTOR(S): Yamamoto, Hironori; Mori, Mitsuhiro; Iriyama, Jiro; Miyaji, Mariko; Utsuki, Koji; Sakauchi, Hiroshi; Miura, Tamaki; Yamazaki, Ikiko
PATENT ASSIGNEE(S): NEC Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2003217574 | A2 | 20030731 | JP 2002-13749 <-- | 20020123 |
| WO 2003063270 | A1 | 20030731 | WO 2003-JP566 <-- | 20030122 |
| W: CN, KR, US<br>RW: DE, FR, GB | | | | |
| US 2005147888 | A1 | 20050707 | US 2003-502268 <-- | 20030122 |
| CN 1639889 | A | 20050713 | CN 2003-804419 <-- | 20030122 |
| PRIORITY APPLN. INFO.: | | | JP 2002-13749 A | 20020123 |

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WO 2003-JP566 W
200301
22
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AB The anode, capable of intercalating and decalating Li+, comprises an alloy layer: contg. a 1st metal which is alloyable with Li, or Li, and a 2nd metal which is not alloyable with Li; or a composite oxide layer.

IT **39286-52-7**
RL: DEV (Device component use); USES (Uses)
(**anodes** contg. alloy or composite oxide layers for secondary lithium **batteries**)

RN 39286-52-7 HCAPLUS
CN Cobalt alloy, nonbase, Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

IC ICM H01M004-02
ICS H01M004-38; H01M004-58; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 7439-93-2, Lithium, uses 7440-31-5, Tin, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 11110-83-1 12039-88-2, Tungsten disilicide (WSi2) 12643-20-8, Copper silicide 12668-36-9 **39286-52-7** 39302-37-9, Lithium titanium oxide 66102-93-0, Cobalt lithium nitride
RL: DEV (Device component use); USES (Uses)
(**anodes** contg. alloy or composite oxide layers for secondary lithium **batteries**)

L41 ANSWER 27 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:414418 HCAPLUS
DOCUMENT NUMBER: 138:404347
TITLE: Anode containing tinplated current collector and its manufacture for secondary lithium battery
INVENTOR(S): Kitamura, Shingo; Obata, Keigo; Sakai, Tetsuo; Sonoda, Tsukasa
PATENT ASSIGNEE(S): Daiwa Kasei Kenkyusho K. K., Japan; National Institute of Advanced Industrial Science and Technology
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2003157833 | A2 | 20030530 | JP 2001-353104 | 200111 19 |

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PRIORITY APPLN. INFO.: JP 2001-353104 200111 19
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AB The claimed anode has a structure consisting of (1) a current collector, (2) a Sn plating or a Sn alloy plating formed on (1), and (3) an interface between (1) and (2) having medium Li absorptivity

between (1) and (2). The interface may contain an intermetallic compd. of Cu and Sn. The anode is manufd. by electroplating Sn or a Sn alloy on a Cu current collector and then heat treating at 80-190° under nonoxidizing atm. The resulting battery provides high capacity and long cycle life.

IT **57886-64-3**
RL: DEV (Device component use); USES (Uses)
(electroplate; **anode** contg. tinplated current collector and intermetallic compd. manufd. by heat treatment for lithium **battery**)

RN 57886-64-3 HCAPLUS
CN Tin alloy, base, Sn,Co (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Sn | 7440-31-5 |
| Co | 7440-48-4 |

IC ICM H01M004-02
ICS H01M004-04; H01M004-38; H01M004-66; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 11148-30-4 12610-63-8 12727-68-3 37219-43-5 39383-54-5 51398-55-1 53805-00-8 53805-01-9 53805-02-0 **57886-64-3** 61030-02-2 62766-84-1
RL: DEV (Device component use); USES (Uses)
(electroplate; **anode** contg. tinplated current collector and intermetallic compd. manufd. by heat treatment for lithium **battery**)

L41 ANSWER 28 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:187125 HCAPLUS
DOCUMENT NUMBER: 138:356200
TITLE: Synthesis and characteristics of CoSn and Cu-Sn alloys as anode materials in lithium-ion cell
AUTHOR(S): Mi, Chang-Huan; Zhang, Xiao-Gang; Cao, Gao-Shao
CORPORATE SOURCE: Institute of Applied Chemistry, Xinjiang University, Urumqi, 830046, Peop. Rep. China
SOURCE: Wuji Huaxue Xuebao (**2003**), 19(3), 283-286
CODEN: WHUXEO; ISSN: 1001-4861
PUBLISHER: Wuji Huaxue Xuebao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

AB CoSn alloy and Cu-Sn samples were synthesized by H2-redn. following solid-state reaction between Co(II), Cu(II), Sn(IV) and NaOH at ambient temp. The samples were characterized by XRD and SEM. The results showed that CoSn alloy (80-200 nm) is a globular-shaped, ultrafine hexagonal material, and Cu-Sn alloy powder consists of two phases, i.e. Cu6Sn5 and Cu3Sn. Cu-Sn powder has spherical morphol. and the **particle** size is estd. to be 60-70 nm. The electrochem. performances of CoSn alloy and Cu-Sn powder were studied using lithium-ion model cell Li/LiPF6(EC + DMC)/CoSn (or Cu-Sn). It was demonstrated the reversible discharge capacities for 10 cycles keep above 280 mAh·g-1 for nanophase Cu-Sn, and 60 mAh·g-1 for CoSn alloy. Differential capacity plots showed that the reaction mechanisms of Cu-Sn with lithium were reversible.

IT **12019-61-3P 12019-69-1P 12297-65-3P 12668-36-9P 39286-52-7P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**battery anodes**; synthesis and characteristics of CoSn and Cu-Sn alloys as **anode** materials in lithium-ion **cell**)

RN 12019-61-3 HCAPLUS

CN Copper, compd. with tin (3:1) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 3 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

RN 12019-69-1 HCAPLUS
CN Copper, compd. with tin (6:5) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 6 | 7440-50-8 |
| Sn | 5 | 7440-31-5 |

RN 12297-65-3 HCAPLUS
CN Cobalt, compd. with tin (1:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 12668-36-9 HCAPLUS
CN Copper alloy, nonbase, Cu,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Cu | 7440-50-8 |
| Sn | 7440-31-5 |

RN 39286-52-7 HCAPLUS
CN Cobalt alloy, nonbase, Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT **12019-61-3P 12019-69-1P 12297-65-3P 12668-36-9P 39286-52-7P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**battery anodes**; synthesis and characteristics of CoSn and Cu-Sn alloys as **anode** materials in lithium-ion **cell**)

L41 ANSWER 29 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:97208 HCAPLUS
DOCUMENT NUMBER: 138:156268
TITLE: Anode for secondary lithium battery and its manufacture
INVENTOR(S): Kajita, Osamu; Nishida, Motonori; Yamamoto, Koichi; Tanigawa, Ryuichi; Onishi, Toshiki; Masuoka, Sachiko; Yoshinaga, Hiroshi; Sakai, Tetsuo
PATENT ASSIGNEE(S): Fukuda Metal Foil and Powder Co., Ltd., Japan; National Institute of Advanced Industrial

Science and Technology
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2003036840 | A2 | 20030207 | JP 2001-321626 | 20011019 |

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PRIORITY APPLN. INFO.: JP 2001-148580 A 20010518

<--

AB The anode has a Sn or Sn alloy active mass on 1 or both side of a Cu collector; where Cu is compatibilizing with Sn or the Sn alloy, forming an alloy phase in the interface of the collector and the active mass. The anode is prepd. by hot dipping the Sn or Sn alloy active mass on 1 or both side of the Cu collector, and heating at 200 -600° in a nonoxidizing gas atm. to form the alloy phase in the interface of the collector and the active mass.

IT **190664-18-7**
RL: DEV (Device component use); USES (Uses)
(structure and manuf. of **anodes** contg. alloy phase interface between Sn or Sn alloy active mass and Cu collectors for secondary Li **batteries**)

RN 190664-18-7 HCAPLUS
CN Tin alloy, base, Sn 90,Co 10 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 90 | 7440-31-5 |
| Co | 10 | 7440-48-4 |

IC ICM H01M004-02
ICS H01M004-04; H01M004-38; H01M004-66; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7440-31-5, Tin, uses 7440-50-8, Copper, uses 12664-06-1
37316-10-2 39428-07-4 55918-93-9 58847-03-3 106187-84-2
189357-64-0 **190664-18-7** 374806-33-4 495504-64-8
495504-67-1 495504-73-9 495504-76-2 495504-83-1 495504-88-6
495504-91-1 495504-94-4 495504-97-7
RL: DEV (Device component use); USES (Uses)
(structure and manuf. of **anodes** contg. alloy phase interface between Sn or Sn alloy active mass and Cu collectors for secondary Li **batteries**)

L41 ANSWER 30 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:58409 HCAPLUS
DOCUMENT NUMBER: 138:124985
TITLE: secondary nonaqueous electrolyte battery
INVENTOR(S): Miyaki, Yukio
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: PCT Int. Appl., 25 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2003007405 | A1 | 20030123 | WO 2002-JP7011 | 200207 10 |
| | | | <-- | |
| W: CN, KR, US | | | | |
| RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR | | | | |
| JP 2003031211 | A2 | 20030131 | JP 2001-209727 | 200107 10 |
| | | | <-- | |
| JP 3714205 | B2 | 20051109 | | |
| EP 1406325 | A1 | 20040407 | EP 2002-745925 | 200207 10 |
| | | | <-- | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR, BG, CZ, EE, SK | | | | |
| US 2004029004 | A1 | 20040212 | US 2003-385159 | 200303 10 |
| | | | <-- | |
| US 6908709 | B2 | 20050621 | | |
| US 2005181276 | A1 | 20050818 | US 2005-77480 | 200503 10 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2001-209727 A | 200107 10 |
| | | | <-- | |
| | | | WO 2002-JP7011 W | 200207 10 |
| | | | <-- | |
| | | | US 2003-385159 A1 | 200303 10 |
| | | | <-- | |

AB A secondary Li battery uses an anode contg. a carbonaceous material, a polymer, and a Sn compd. SnMxM'yM"z, where M = Co and/or Cu; M' = Cr, Fe, Mn, Nb, Mo, W, B, and/or P; M" = In, Ag, Zn, and/or Al; 0.1 <x ≤2, 0 <y ≤2, and 0 <z ≤1.

IT **489428-87-7**
RL: DEV (Device component use); USES (Uses)
(compns. of tin alloys in carbonaceous **anodes** for secondary lithium **batteries**)

RN 489428-87-7 HCAPLUS

CN Cobalt alloy, base, Co 55,Sn 45 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Co | 55 | 7440-48-4 |
| Sn | 45 | 7440-31-5 |

IC ICM H01M004-38
ICS H01M004-58; H01M004-62; H01M004-02; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 12787-61-0 70993-37-2 489428-73-1 489428-74-2 489428-75-3 489428-76-4 489428-77-5 489428-78-6 489428-79-7 489428-80-0

489428-81-1 489428-82-2 489428-83-3 489428-84-4 489428-85-5
489428-86-6 **489428-87-7** 489428-88-8 489428-89-9
RL: DEV (Device component use); USES (Uses)
(compns. of tin alloys in carbonaceous **anodes** for secondary lithium **batteries**)
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 31 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:40389 HCAPLUS
DOCUMENT NUMBER: 138:76185
TITLE: Anode active mass containing composite particle and its manufacture by sol-gel process for secondary nonaqueous-electrolyte battery
INVENTOR(S): Takami, Norio; Morita, Tomokazu
PATENT ASSIGNEE(S): Toshiba Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2003017051 | A2 | 20030117 | JP 2001-195163 | 200106 27 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2001-195163 | 200106 27 |
| | | | <-- | |

AB The title active mass is a composite particle of (1) a carbonaceous phase contg. a Li-intercalating metal-contg. phase having av. size 0.2-50 nm and (2) a graphite phase having av. size 0.005-10 μm. The active mass is manufd. by following steps; prepg. an organometal compd.-dispersed soln. contg. an alkoxide or an acetylacetonate of a Li-intercalating metal; and then heating a mixt. contg. the soln., an org. substance, and graphite. A battery equipped with the anode active mass provides long cycle life.
IT **7440-31-5P**, Tin, uses
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(sol-gel process and carbonization in manuf. of Li-intercalating metal-contg. carbon/graphite composite **particle** for **battery anode**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-58
ICS H01M004-02; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7429-90-5P, Aluminum, uses 7439-92-1P, Lead, uses 7440-21-3P, Silicon, uses **7440-31-5P**, Tin, uses 7440-32-6P, Titanium, uses 7440-36-0P, Antimony, uses 7440-74-6P, Indium, uses
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(sol-gel process and carbonization in manuf. of Li-intercalating metal-contg. carbon/graphite composite **particle** for **battery anode**)

L41 ANSWER 32 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:773820 HCAPLUS
DOCUMENT NUMBER: 137:281900
TITLE: Secondary lithium batteries using alloy anodes, preparation of same anodes by mechanical alloying, and same anodes themselves
INVENTOR(S): Aizawa, Tatsuhiko; Sato, Toshitada; Nakamoto, Takayuki; Shimamura, Harushige; Okamura, Kazuhiro
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2002298836 | A2 | 20021011 | JP 2001-103123 | 200104 02 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2001-103123 | 200104 02 |
| | | | <-- | |

AB The alloy anodes are prepd. from ≥2 kinds of raw material element powders by repeating compressing and extruding in molds. The preferable alloy compns. are selected from Fe2Sn, Ti2Sn, Ti6Sn5, Cu6Sn5, Co2Sn, NiSn2, FeCuSn, NiSi2, TiSi2, TiAl, NiIn2, and Mg2Pb. The alloying method provides the desired alloys with uniform compns. in high yield.

IT **177406-56-3P**, Cobalt 66.7, tin 33.3 (atomic)
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(prepn. of alloy **anodes** for secondary lithium **batteries** by mech. alloying raw material element powders)

RN 177406-56-3 HCAPLUS
CN Cobalt alloy, base, Co 50,Sn 50 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Co | 50 | 7440-48-4 |
| Sn | 50 | 7440-31-5 |

IC ICM H01M004-04
ICS B22F003-02; B22F003-035; B22F005-00; C22C033-02; H01M004-02; H01M004-38; H01M010-40; C22C009-02; C22C011-02; C22C013-00; C22C014-00; C22C019-03; C22C019-07; C22C028-00; C22C038-00

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56

IT 12739-86-5P 12787-61-0P 37352-38-8P, Silicon 66.7, titanium 33.3 (atomic) 53550-31-5P, Aluminum 50, titanium 50 (atomic) 57952-74-6P 96208-32-1P 124174-27-2P **177406-56-3P**, Cobalt 66.7, tin 33.3 (atomic) 464173-67-9P 464173-68-0P 464173-69-1P 464173-70-4P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(prepn. of alloy **anodes** for secondary lithium **batteries** by mech. alloying raw material element powders)

L41 ANSWER 33 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:714384 HCAPLUS
DOCUMENT NUMBER: 137:235243
TITLE: Secondary light metal battery
INVENTOR(S): Shibamoto, Goro; Fujita, Shigeru; Adachi, Momoe; Akashi, Hiroyuki
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2002270154 | A2 | 20020920 | JP 2001-73061 | 200103 14 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2001-73061 | 200103 14 |
| | | | <-- | |

AB The battery uses an anodes, whose capacity is the total intercalation and deposition capacities of light metal M of its active mass, and a cathode active mass have particle diam. in the ranges 1-20, 3-35, and 6-50 μm at 10, 50, and 90% counts on its integral particle size distribution pattern, and sp. surface area 0.1-2 m2/g. The cathode active mass is preferably LixMO4, M = transition metal and 0.05 ≤x ≤1.10; and the anode is a carbonaceous material or a metal, semiconductor, or alloy capable of alloying or forming compd. with the light metal.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(**anodes** in secondary lithium **batteries** with lithium transition metal oxide cathode active mass having controlled **particle** size distribution and sp. surface area)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-02
ICS H01M004-02; H01M004-38; H01M004-48; H01M004-58; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses **7440-31-5**, Tin, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-42-8, Boron, uses 7440-43-9, Cadmium, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-58-6, Hafnium, uses 7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses
RL: DEV (Device component use); USES (Uses)
(**anodes** in secondary lithium **batteries** with lithium transition metal oxide cathode active mass having controlled **particle** size distribution and sp. surface

area)

L41 ANSWER 34 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:395310 HCAPLUS
DOCUMENT NUMBER: 137:188163
TITLE: Nano-scale Cu6Sn5 anodes
AUTHOR(S): Wolfenstine, J.; Campos, S.; Foster, D.; Read, J.; Behl, W. K.
CORPORATE SOURCE: Army Research Laboratory, AMSRL-SE-DC, Adelphi, MD, 20783-1197, USA
SOURCE: Journal of Power Sources (2002), 109(1), 230-233
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Nanoscale (<100 nm) Cu5Sn6 powders were prepd. by a chem. method that used a NaBH4 soln. to reduce the metal ions. A significant improvement in capacity retention was obtained in the nanoscale Cu6Sn5 alloy, compared to the alloy having micron-sized **particles.** The volumetric capacity of the nanoscale Cu6Sn5 alloy at 100 cycles was almost twice the theor. capacity of graphite.
IT **12019-69-1**
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(prepn. and characterization of nanoscale copper-tin alloy **anodes** for **batteries**)
RN 12019-69-1 HCAPLUS
CN Copper, compd. with tin (6:5) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 6 | 7440-50-8 |
| Sn | 5 | 7440-31-5 |

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT **12019-69-1**
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(prepn. and characterization of nanoscale copper-tin alloy **anodes** for **batteries**)
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 35 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:372958 HCAPLUS
DOCUMENT NUMBER: 137:297254
TITLE: Effect of heat treatment and additives on the particles and carbon fibers as anodes for lithium-ion batteries
AUTHOR(S): Nadeau, Gabrielle; Song, Xiang Yun; Masse, Monique; Guerfi, Abdelbast; Brisard, Gessie; Kinoshita, Kimio; Zaghib, Karim
CORPORATE SOURCE: Montee Ste-Julie, Lionel-Boulet, Service Chimie des Materiaux, Institut de Recherche d'Hydro-Quebec, Varennes, QC, J3X 1S1, Can.
SOURCE: Journal of Power Sources (2002), 108(1-2), 86-96
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal
LANGUAGE: English
AB Carbon fiber (CF) and meso-carbon microbead (MCMB) precursors were heat treated at 700-2800 °C, and the electrochem. and phys. properties of the carbons were investigated. These carbons are quite different from natural graphite, which has a well-ordered layer planes where intercalation occur and two distinct surface sites, i.e. basal and edge plane sites. In the case of the fibers, intercalation occur by a single plane (circular area) or by two planes, the circular area and the cylindrical edge. For MCMB, because of its sphere-like structure, this type of carbon is able to intercalate lithium ions more uniformly (i.e. 360°). The effect of additives (B, Ag and Sn) in the two carbon samples (CF and MCMB) on the electrochem. performance was also investigated.
IT **7440-31-5**, Tin, uses
RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(effect of heat-treatment and additives on the **particles** and carbon fibers as **anodes** for lithium-ion **batteries**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7440-22-4, Silver, uses **7440-31-5**, Tin, uses 7440-42-8, Boron, uses
RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(effect of heat-treatment and additives on the **particles** and carbon fibers as **anodes** for lithium-ion **batteries**)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 36 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:313439 HCAPLUS
DOCUMENT NUMBER: 136:328177
TITLE: Lithium battery anode materials and their manufacture
INVENTOR(S): Wada, Hitoshi; Yoshinaga, Hiroshi; Sakai, Tetsuo; Xia, Yongyao; Fujieda, Takuya
PATENT ASSIGNEE(S): Fukuda Metal Foil and Powder Co., Ltd., Japan; Sangyo Gijutsu Sogo Kenkyusho
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2002124254 | A2 | 20020426 | JP 2000-317002 | 200010 17 |

<--
PRIORITY APPLN. INFO.: JP 2000-317002

200010
17

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AB The materials are manufd. by mech. alloying mixts. contg. primary substances which easily form compds. with Li and secondary substances which hardly form compds. with Li and then heating the resulting flaky composite **particles** in a nonoxidizing atm. The primary substances may be Sn, Si, Al, Ag, and/or their compds. The secondary substances may be Cu, Ni, Co, and/or their compds. The materials have good cycle performance as same as conventional C materials and higher discharge capacity than the C materials.

IT **55918-93-9 62186-40-7 105914-71-4**
RL: DEV (Device component use); USES (Uses)
(mech. alloyed flaky composite **anode** materials and their manuf. for Li **battery**)

RN 55918-93-9 HCAPLUS
CN Tin alloy, base, Sn 60,Cu 40 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 60 | 7440-31-5 |
| Cu | 40 | 7440-50-8 |

RN 62186-40-7 HCAPLUS
CN Copper alloy, base, Cu 50,Sn 50 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Cu | 50 | 7440-50-8 |
| Sn | 50 | 7440-31-5 |

RN 105914-71-4 HCAPLUS
CN Tin alloy, base, Sn 67,Cu 33 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 67 | 7440-31-5 |
| Cu | 33 | 7440-50-8 |

IC ICM H01M004-38
ICS B22F001-00; C22C001-04; C22C013-00; H01M004-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT **55918-93-9 62186-40-7 105914-71-4**
RL: DEV (Device component use); USES (Uses)
(mech. alloyed flaky composite **anode** materials and their manuf. for Li **battery**)

L41 ANSWER 37 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:241160 HCAPLUS
DOCUMENT NUMBER: 136:265820
TITLE: Secondary lithium battery anode and the battery
INVENTOR(S): Tamura, Noriyuki; Nakamizo, Shiori; Jito, Daizo; Ohshita, Ryuji; Fujimoto, Masahisa; Fujitani, Shin; Kamino, Maruo
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2002025757 | A1 | 20020328 | WO 2001-JP8129 | 200109 19 |
| | | | <-- | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| JP 2002373647 | A2 | 20021226 | JP 2001-282739 | 200109 18 |
| | | | <-- | |
| AU 2001090238 | A5 | 20020402 | AU 2001-90238 | 200109 19 |
| | | | <-- | |
| CA 2421498 | AA | 20030305 | CA 2001-2421498 | 200109 19 |
| | | | <-- | |
| US 2003180619 | A1 | 20030925 | US 2003-380801 | 200303 19 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2000-285343 A | 200009 20 |
| | | | <-- | |
| | | | JP 2001-113069 A | 200104 11 |
| | | | <-- | |
| | | | WO 2001-JP8129 W | 200109 19 |
| | | | <-- | |

AB The anode has a thin alloy film of a Li alloying metal and a non-alloying metal on a collector. The alloy film may have cuts in the thickness direction after an initial charge-discharge cycle, the collector may have roughness Ra 0.01-2 μm, and the Li alloying meta, is preferably Sn and the non-alloy metal is selected from Fe, Co,and Ni.

IT **39286-52-7 405234-59-5**
RL: DEV (Device component use); USES (Uses)
(alloys and intermetallic compds. of lithium alloying metals and non-alloying metals for secondary lithium **battery anodes**)

RN 39286-52-7 HCAPLUS

CN Cobalt alloy, nonbase, Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

RN 405234-59-5 HCAPLUS
CN Tin alloy, base, Sn 83,Co 17 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 83 | 7440-31-5 |
| Co | 17 | 7440-48-4 |

IC ICM H01M004-02
ICS H01M004-38; H01M010-40; H01M004-66
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 12739-90-1 **39286-52-7 405234-59-5** 405234-60-8
405234-61-9 405234-62-0
RL: DEV (Device component use); USES (Uses)
(alloys and intermetallic compds. of lithium alloying metals and non-alloying metals for secondary lithium **battery anodes**)
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 38 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:238073 HCAPLUS
DOCUMENT NUMBER: 136:265793
TITLE: Manufacture of anode active mass for secondary nonaqueous electrolyte battery
INVENTOR(S): Nakamoto, Takayuki; Sato, Toshitada; Shimamura, Harushige; Okamura, Kazuhiro
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2002093412 | A2 | 20020329 | JP 2000-276915 | 200009 12 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2000-276915 | 200009 12 |
| | | | <-- | |

AB The anode is prepd. by filling a raw material, contg. ≥1 Group 2-11 metal and ≥1 Group 13-15 element, in a mold having a bent through hole bending ≤180°, and pushing the material through the hole by a rod while applying a shearing force to the mixt.
IT **55071-50-6P**
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(manuf. of **anode** active mass by applying shearing force on raw material for secondary lithium **batteries**)
RN 55071-50-6 HCAPLUS
CN Cobalt, compd. with tin (2:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 2 | 7440-48-4 |

Sn | 1 | 7440-31-5

IC ICM H01M004-38
ICS H01M004-02; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 12003-96-2P, AlTi 12032-53-0P 12039-83-7P, Titanium silicide (TiSi2) 12054-11-4P, CuSn 12201-89-7P, Nickel silicide (NiSi2) 12509-20-5P 12510-35-9P, SnTi2 12763-92-7P **55071-50-6P** 210885-32-8P 264124-74-5P 405234-66-4P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(manuf. of **anode** active mass by applying shearing force on raw material for secondary lithium **batteries**)

L41 ANSWER 39 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:10860 HCAPLUS
DOCUMENT NUMBER: 136:72296
TITLE: Production of cathodes and anodes for batteries and fuel cells, metalized material for the electrodes, and production of the metalized material
INVENTOR(S): Kollmann, Wolfgang; Kollmann, Helga
PATENT ASSIGNEE(S): Austria
SOURCE: PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2002001656 | A2 | 20020103 | WO 2001-EP7467 | 200106 29 |
| | | | <-- | |
| WO 2002001656 | A3 | 20020808 | | |
| WO 2002001656 | C2 | 20030515 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| EP 1299916 | A2 | 20030409 | EP 2001-949450 | 200106 29 |
| | | | <-- | |
| EP 1299916 | B1 | 20040707 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| AT 270791 | E | 20040715 | AT 2001-949450 | 200106 29 |
| | | | <-- | |
| ES 2225574 | T3 | 20050316 | ES 2001-1949450 | 200106 29 |
| | | | <-- | |

US 2004013812 A1 20040122 US 2003-312618 200308 04
<--
PRIORITY APPLN. INFO.: DE 2000-10031633 A 200006 29
<--
WO 2001-EP7467 W 200106 29
<--

AB The invention relates to prodn. of composite cathodes and anodes for Li batteries, and the cathodes and anodes thereby produced. The active mass in the form of a thin film is incorporated into a material, or the active mass together with a matrix metal or a matrix alloy is deposited on a substrate. The invention also relates to a metalized, textile material made of insulating fibers which were made conductive and which were completely electroplated or electroless coated. The fibers lying on crossovers are not baked with other fibers, but can move freely. The surface of the material is thereby optimally used. Preferably, the material is used as an anode or a cathode for batteries, esp. a lithium battery, and fuel cells. During the electroplating or electroless coating stage in the prodn. of the material, the fibers in the material move relatively to each other to avoid baking. A device for the prodn. process comprises 1st rollers with an elliptical cross section and 2nd rollers with a diagonal circumferential profile, which extend or move the material passing over, and conveyed thereby, in the longitudinal and lateral direction.

IT **39286-52-7**
RL: TEM (Technical or engineered material use); USES (Uses)
(in prodn. of cathodes and **anodes** for **batteries** and fuel **cells**)

RN 39286-52-7 HCAPLUS
CN Cobalt alloy, nonbase, Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

IC ICM H01M004-66
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 56, 72

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-22-4, Silver, uses 7440-32-6, Titanium, uses 7440-44-0, Carbon, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 11110-83-1 11149-64-7 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (LiCoO2) 12649-48-8 12683-37-3 12783-98-1 12797-00-1, Cobalt, nickel, phosphorus **39286-52-7** 55326-82-4, Lithium titanium sulfide (LiTiS2) 55964-31-3, Lithium vanadium selenide (LiVSe2) 87398-22-9
RL: TEM (Technical or engineered material use); USES (Uses)
(in prodn. of cathodes and **anodes** for **batteries** and fuel **cells**)

L41 ANSWER 40 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:865033 HCAPLUS
DOCUMENT NUMBER: 136:9042
TITLE: Manufacture of anode active mass for secondary

lithium battery, the anode, the battery, and manufacture of the anode and the battery

INVENTOR(S): Yamamoto, Tomoya; Umeyama, Hiroya; Kawakami, Soichiro

PATENT ASSIGNEE(S): Canon Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001332254 | A2 | 20011130 | JP 2001-68918 | 200103 12 |
| | | | <-- | |
| CN 1333576 | A | 20020130 | CN 2001-125938 | 200103 13 |
| | | | <-- | |
| US 2002015889 | A1 | 20020207 | US 2001-804191 | 200103 13 |
| | | | <-- | |
| US 6835332 | B2 | 20041228 | | |
| TW 521451 | B | 20030221 | TW 2001-90105866 | 200103 13 |
| | | | <-- | |
| US 2005079414 | A1 | 20050414 | US 2004-919295 | 200408 17 |
| | | | <-- | |
| US 2005142446 | A1 | 20050630 | US 2004-919294 | 200408 17 |
| | | | <-- | |

PRIORITY APPLN. INFO.: JP 2000-69100 A 200003 13

<-- US 2001-804191 A3 200103 13

<--

AB The anode active mass is manufd. by prepg. a soln. contg. ≥1 Li alloying metal salts or complexes, ≥1 transition metal salts or complexes, and a complexing agent; mixing the soln. with a reducing agent; and pptg. amorphous Li alloying metal by reducing the metal and transition metal ions, while oxidizing the reducing agent;. The anode has the above active mass on a Li non-alloying collector, and is prepd. by applying the active mass on the collector, e.g., by pressing.

IT **94240-46-7P**
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(manuf. of amorphous lithium alloying **anode** active mass from metal salt and complexes for secondary lithium **batteries**)

RN 94240-46-7 HCAPLUS

CN Tin alloy, base, Sn 86,Co 14 (9CI) (CA INDEX NAME)

Component Component Component

| | Percent | Registry Number |
|---|---|---|
| Sn | 86 | 7440-31-5 |
| Co | 14 | 7440-48-4 |

IC ICM H01M004-40
ICS B22F005-00; H01M004-02; H01M004-04; H01M010-40; C22C024-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT **94240-46-7P** 128943-10-2P
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(manuf. of amorphous lithium alloying **anode** active mass from metal salt and complexes for secondary lithium **batteries**)

L41 ANSWER 41 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:796591 HCAPLUS
DOCUMENT NUMBER: 135:346872
TITLE: Anode active mass for secondary nonaqueous electrolyte batteries and its manufacture
INVENTOR(S): Takeshita, Yukiteru; Kamishiro, Koichi; Negi, Noriyuki; Uenaka, Hideya; Kohiyori, Motoji; Nitta, Yoshiaki; Shimamura, Harushige; Okamura, Kazuhiro
PATENT ASSIGNEE(S): Sumitomo Metal Industries, Ltd., Japan; Matsushita Electric Industrial Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001307723 | A2 | 20011102 | JP 2000-118648 | 200004 19 <-- |
| PRIORITY APPLN. INFO.: | | | JP 2000-118648 | 200004 19 <-- |

AB The anode active mass contains an alloy having a 1st group of phases of elements, capable of reversibly bonding with Li, and a 2nd group of phases contg. ≥1 element in the 1st group and ≥1 Group IIA, IIIA, IVA and transition metals, and contains Li added before the solidification of the alloy. The active mass is prepd. by adding a Li source to a melt of the alloy components and solidifying the alloy.
IT **190664-12-1**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(structure and manuf. of multiphase lithium alloying **anode** active mass for secondary lithium **batteries**)
RN 190664-12-1 HCAPLUS
CN Tin alloy, base, Sn 87,Co 13 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 87 | 7440-31-5 |
| Co | 13 | 7440-48-4 |

IT **12394-61-5**
RL: MSC (Miscellaneous)
(structure and manuf. of multiphase lithium alloying **anode** active mass for secondary lithium **batteries**
)
RN 12394-61-5 HCAPLUS
CN Cobalt, compd. with tin (1:2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

IC ICM H01M004-38
ICS C22C001-02; C22C030-00; H01M004-02; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 81572-78-3 139530-68-0 165723-76-2 **190664-12-1**
259750-77-1 264609-25-8 371921-00-5 371921-01-6 371921-02-7
371921-03-8 371921-04-9 371921-05-0 371921-06-1 371921-07-2
371921-08-3 371921-09-4 371921-10-7 371921-11-8 371921-12-9
371921-13-0
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(structure and manuf. of multiphase lithium alloying **anode** active mass for secondary lithium **batteries**
)
IT 7440-21-3, Silicon, miscellaneous 11099-22-2 11148-21-3
12017-12-8, Cobalt silicide (CoSi2) 12022-99-0, Iron silicide (FeSi2) 12035-57-3, NiSi 12039-83-7, Titanium silicide (TiSi2)
12039-87-1, Vanadium silicide (VSi2) 12039-88-2, Tungsten silicide (WSi2) 12137-04-1, Neodymium silicide (NdSi2) 12201-89-7, Nickel silicide (NiSi2) **12394-61-5** 53095-77-5, Magnesium silicide (MgSi2) 71818-44-5 125694-24-8
RL: MSC (Miscellaneous)
(structure and manuf. of multiphase lithium alloying **anode** active mass for secondary lithium **batteries**
)

L41 ANSWER 42 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:780558 HCAPLUS
DOCUMENT NUMBER: 135:346844
TITLE: Anode active mass for secondary nonaqueous batteries and its manufacture
INVENTOR(S): Takeshita, Yukiteru; Negi, Noriyuki; Yamamoto, Hiroyoshi; Kohiyori, Motoji; Yonemura, Koji; Nitta, Yoshiaki; Shimamura, Harushige
PATENT ASSIGNEE(S): Sumitomo Metal Industries, Ltd., Japan; Matsushita Electric Industrial Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001297757 | A2 | 20011026 | JP 2000-113912 | 200004 14 |

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PRIORITY APPLN. INFO.: JP 2000-113912

200004
14

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AB The anode active mass has a 1st part contg. ≥1 Li intercalating metal (M) phase, and a 2nd part contg. ≥1 phases of intermetallic compds. or solid solns. of M with >1 non-M elements selected from Group 2, transition metal, and Group 13-15 elements or the non-M element alone; where a portion of the 2nd part has a granular and/or an acicular structure, and a portion of the 2nd part is surrounded by a layered structure of the 2 parts or by the 1st part or the 1st part in a fine granular structure. The anode active mass is prepd. by a rapidly solidifying melted compn. at ≥100°/s.

IT **12394-61-5P 370598-45-1P 370598-46-2P**
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(compns. and structure and manuf. of multiphase **anode** active mass for secondary lithium **batteries**)

RN 12394-61-5 HCAPLUS
CN Cobalt, compd. with tin (1:2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

RN 370598-45-1 HCAPLUS
CN Cobalt, compd. with tin (0.14:0.86) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 0.14 | 7440-48-4 |
| Sn | 0.86 | 7440-31-5 |

RN 370598-46-2 HCAPLUS
CN Cobalt, compd. with tin (0.18:0.82) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 0.18 | 7440-48-4 |
| Sn | 0.82 | 7440-31-5 |

IC ICM H01M004-38
ICS H01M004-02; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7429-90-5P, Aluminum, uses 7440-31-5P, Tin, uses 7440-41-7P, Beryllium, uses 12137-64-3P, Silicon phosphide (SiP) **12394-61-5P** 106698-75-3P, Aluminum silicide 145998-02-3P, Germanium silicide (GeSi) 158616-16-1P, Tin silicide (SnSi2) **370598-45-1P 370598-46-2P**
370598-47-3P, Cobalt iron silicide (Co0.41Fe0.02Si0.57)
370598-48-4P, Titanium zinc silicide (Ti0.4Zn0.01Si0.59)
370598-49-5P, Beryllium silicide (Be0.87Si0.13)
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(compns. and structure and manuf. of multiphase **anode** active mass for secondary lithium **batteries**)

L41 ANSWER 43 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:763375 HCAPLUS
DOCUMENT NUMBER: 135:320488
TITLE: Secondary nonaqueous electrolyte batteries

INVENTOR(S): Nitta, Yoshiaki; Bito, Yasuhiko; Sato, Toshitada; Okamura, Kazuhiro; Shimamura, Harunari
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2001078167 | A1 | 20011018 | WO 2001-JP2842 | 200103 30 |
| | | | <-- | |
| W: CN, KR, US | | | | |
| RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR | | | | |
| JP 2001291512 | A2 | 20011019 | JP 2000-103039 | 200004 05 |
| | | | <-- | |
| EP 1274140 | A1 | 20030108 | EP 2001-917771 | 200103 30 |
| | | | <-- | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR | | | | |
| US 2003039891 | A1 | 20030227 | US 2002-129240 | 200205 01 |
| | | | <-- | |

PRIORITY APPLN. INFO.:
JP 2000-103039 A 200004 05
<--
WO 2001-JP2842 W 200103 30
<--

AB The batteries have a nonaq. electrolyte soln., separators, Li intercalating cathodes, and Li intercalating anodes; where the anode active mass **particles** have a core of a 1st solid phase contg. Si, Sn, and/or Zn, a shell of a 2nd solid phase of a solid soln. or an intermetallic compd. of the 1st phase component and ≥1 of Si, Sn, Zn, and Group 2-14 elements other than C, with the 1st and/or 2nd phase being amorphous.

IT **12019-69-1**
RL: DEV (Device component use); USES (Uses)
(**anode** active mass **particles** with intermetallic compd. or solid soln. shells for secondary lithium **batteries**)

RN 12019-69-1 HCAPLUS
CN Copper, compd. with tin (6:5) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 6 | 7440-50-8 |
| Sn | 5 | 7440-31-5 |

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)

(tin **particles** with intermetallic compd. or solid soln. shells for secondary lithium **battery anodes**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-38
ICS H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT Battery anodes
(anode active mass **particles** with intermetallic compd. or solid soln. shells for secondary lithium batteries)
IT 1313-08-2 11099-22-2 11109-57-2 11110-87-5 11124-13-3 11125-88-5 11143-56-9 11149-84-1 12017-12-8, Cobalt silicide (CoSi2) **12019-69-1** 12023-01-7 12039-83-7, Titanium silicide (TiSi2) 12057-70-4 12166-63-1 12201-89-7, Nickel silicide (NiSi2) 12211-23-3 22831-39-6, Magnesium silicide (Mg2Si) 37230-21-0 71818-44-5 74946-92-2 141850-96-6 144692-49-9
RL: DEV (Device component use); USES (Uses)
(**anode** active mass **particles** with intermetallic compd. or solid soln. shells for secondary lithium **batteries**)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(silicon **particles** with intermetallic compd. or solid soln. shells for secondary lithium battery anodes)
IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(tin **particles** with intermetallic compd. or solid soln. shells for secondary lithium **battery anodes**)
IT 7440-66-6, Zinc, uses
RL: DEV (Device component use); USES (Uses)
(zinc **particles** with intermetallic compd. or solid soln. shells for secondary lithium battery anodes)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 44 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:692222 HCAPLUS
DOCUMENT NUMBER: 135:245002
TITLE: Copper-based anode material for nonaqueous electrolyte secondary battery by electroplating
INVENTOR(S): Ohara, Shuji; Ishida, Shintaro
PATENT ASSIGNEE(S): Mitsui Mining and Smelting Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001256968 | A2 | 20010921 | JP 2000-69421 | 200003 13 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2000-69421 | 200003 |

13
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AB The anode material comprises a Cu foil electroplated with alloys. The anode material is manufd. by electroplating of a Cu foil, followed by heating to form intermetallic compds. The anode material gives batteries with high capacity and high-rate performance.

IT **39286-52-7P 88872-71-3P**
RL: DEV (Device component use); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manuf. of copper-based **anode** material for nonaq. electrolyte secondary **battery** by electroplating)

RN 39286-52-7 HCAPLUS
CN Cobalt alloy, nonbase, Co,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Co | 7440-48-4 |
| Sn | 7440-31-5 |

RN 88872-71-3 HCAPLUS
CN Tin alloy, base, Sn 70,Co 30 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 70 | 7440-31-5 |
| Co | 30 | 7440-48-4 |

IT **12297-65-3 12394-61-5**
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(manuf. of copper-based **anode** material for nonaq. electrolyte secondary **battery** by electroplating)

RN 12297-65-3 HCAPLUS
CN Cobalt, compd. with tin (1:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 12394-61-5 HCAPLUS
CN Cobalt, compd. with tin (1:2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

IC ICM H01M004-02
ICS C25D005-50; C25D007-06; H01M004-38; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56

IT 7440-02-0P, Nickel, uses 7440-31-5P, Tin, uses 7440-36-0P, Antimony, uses 7440-66-6P, Zinc, uses 11110-83-1P 11143-56-9P 11146-70-6P 12202-01-6P 12797-46-5P **39286-52-7P** 39460-45-2P 50941-27-0P 51636-79-4P 54342-36-8P 77885-23-5P **88872-71-3P** 361144-76-5P 361144-77-6P
RL: DEV (Device component use); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(manuf. of copper-based **anode** material for nonaq. electrolyte secondary **battery** by electroplating)

IT **12297-65-3 12394-61-5**
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(manuf. of copper-based **anode** material for nonaq. electrolyte secondary **battery** by electroplating)

L41 ANSWER 45 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:691889 HCAPLUS
DOCUMENT NUMBER: 135:229387
TITLE: Battery with nonaqueous electrolyte and improved anode active material
INVENTOR(S): Inagaki, Hiroki; Takami, Norio
PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan
SOURCE: Eur. Pat. Appl., 12 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| EP 1134824 | A2 | 20010919 | EP 2001-302081 | 20010307 |
| | | | <-- | |
| EP 1134824 | A3 | 20031029 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| US 2001046629 | A1 | 20011129 | US 2001-797883 | 20010305 |
| | | | <-- | |
| US 6686090 | B2 | 20040203 | | |
| JP 2001332253 | A2 | 20011130 | JP 2001-72061 | 20010314 |
| | | | <-- | |
| JP 3648458 | B2 | 20050518 | | |
| CN 1313645 | A | 20010919 | CN 2001-111478 | 20010315 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 2000-72377 A | 20000315 |
| | | | <-- | |

AB The development of a new anode material led to the provision of a battery with nonaq. electrolyte which has a combination of a high discharge capacity with excellent cycling characteristics. The battery with nonaq. electrolyte comprises: a cathode and an anode having an anode active material capable of occluding and releasing an alkali metal. The anode active material contains ≥1 element selected from the group consisting of Group 4B elements and Group 5B elements and has ≥1 crystal structure selected from the group consisting of BiF3 structure, Cu2MnAl structure, and AgAsMg structure. The anode active material contains ≥1 element selected from the group consisting of Al, Si, Ge, Sn, P, Sb, and Bi and has ≥1 crystal structure selected from the group consisting of BiF3 structure, Cu2MnAl structure, and AgAsMg structure.

IT **75349-09-6**
RL: DEV (Device component use); USES (Uses)
(**battery** with nonaq. electrolyte and improved

**anode** active material)
RN 75349-09-6 HCAPLUS
CN Cobalt, compd. with tin (3:1) (7CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 3 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

IC ICM H01M004-38
ICS H01M004-46; H01M004-48; H01M004-58
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-56-4, Germanium, uses 7440-69-9, Bismuth, uses 7723-14-0, Phosphorus, uses 11056-42-1 11118-07-3 12003-42-8 12023-54-0, Iron silicide (Fe3Si) 12032-71-2 12059-23-3 12133-96-9 12163-59-6, Manganese silicide (Mn3Si) 12190-79-3, Cobalt lithium oxide colio2 12423-44-8 12502-69-1 12526-54-4 12526-55-5 12534-03-1 21324-40-3, Lithium hexafluorophosphate 60968-66-3 66590-17-8 **75349-09-6** 99787-36-7 105110-44-9 149571-46-0 149571-49-3 359783-12-3 359783-13-4 359783-14-5 359783-15-6 359783-16-7 359783-17-8, Antimony manganese nickel phosphide (Sb0.8MnNi2P0.2) 359783-18-9, Antimony cobalt manganese phosphide (Sb0.8Co2MnP0.2) 359783-19-0 359783-20-3 359783-21-4, Nickel tin titanium silicide (NiSn0.8TiSi0.2) 359783-22-5, Cobalt tin titanium silicide (CoSn0.8TiSi0.2) 359783-23-6 359783-24-7 359783-25-8 359783-26-9
RL: DEV (Device component use); USES (Uses)
(**battery** with nonaq. electrolyte and improved **anode** active material)

L41 ANSWER 46 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:677124 HCAPLUS
DOCUMENT NUMBER: 135:213522
TITLE: Secondary nonaqueous electrolyte batteries
INVENTOR(S): Kasamatsu, Shinji; Shimamura, Harunari; Nitta, Yoshiaki
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2001067528 | A1 | 20010913 | WO 2001-JP1747 | 200103 06 |
| | | | <-- | |
| W: CN, KR, US | | | | |
| RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR | | | | |
| JP 2001325958 | A2 | 20011122 | JP 2001-58323 | 200103 02 |
| | | | <-- | |
| US 2003096168 | A1 | 20030522 | US 2002-220885 | 200209 |

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<--
US 6911282 B2 20050628
PRIORITY APPLN. INFO.: JP 2000-61483 A
200003
07
<--
JP 2001-58323 A
200103
02
<--
WO 2001-JP1747 W
200103
06
<--

AB The batteries use anodes contg. graphite conductive particles, having median diam. Dc, and Li intercalating particles, having median diam. Da; where the Li intercalating particles have a Si and/or Sn core particle, coated with a solid soln. or intermetallic compd. layer contg. the core component and ≥1 Group 2-14 element other than Si, Sn and C, and have Dc/Da = 0.02-0.5. Preferably, the coating is Ti2Si and Ti2Sn for Si and Sn cores, resp.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(**anodes** from lithium intercalating **particles** with solid soln. or intermetallic compd. coatings for secondary lithium **batteries**)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-38
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 1313-08-2 7440-21-3, Silicon, uses **7440-31-5**, Tin, uses 12039-83-7, Titanium silicide (TiSi2) 12201-89-7, Nickel silicide (NiSi2) 12510-35-9 77137-25-8, Titanium silicide (Ti2Si)
RL: DEV (Device component use); USES (Uses)
(**anodes** from lithium intercalating **particles** with solid soln. or intermetallic compd. coatings for secondary lithium **batteries**)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 47 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:655021 HCAPLUS
DOCUMENT NUMBER: 135:229341
TITLE: Nonaqueous electrolyte secondary batteries with excellent cycle characteristics and high discharge capacity
INVENTOR(S): Nakamoto, Takayuki; Nitta, Yoshiaki; Shimamura, Harushige; Negi, Noriyuki; Yamamoto, Hiroyoshi; Takeshita, Yukiteru; Yonemura, Koji
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan; Sumitomo Metal Industries, Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001243946 | A2 | 20010907 | JP 2000-53317 | 200002 29 |

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PRIORITY APPLN. INFO.: JP 2000-53317 200002 29

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AB The anodes of the batteries include composite particles consisting of (A) a core particle having solid phase A which contains Si, Sn, and/or Zn and (B) a (partial) coating having solid phase B which is a solid soln. or intermetallic compd. of Si, Sn, and/or Zn with ≥1 of Group 2, 12, 13, 14 elements and transition metals (excluding A-forming elements and C), and the composite particles also contain ceramics. The ceramics may be selected from SiC, Si3N4, Al2O3, TiC, TiB2, Y2O3, ZrB2, HfB2, ZrO2, ZnO, WC, and/or W2C. The batteries are suitable for use in mobile phones, personal digital assistances, etc.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(core; solid soln. or intermetallic compd. composite **particles** contg. ceramics as nonaq. electrolyte secondary **battery anodes**)

RN 7440-31-5 HCAPLUS

CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-38
ICS H01M004-02; H01M004-42; H01M004-62; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57

IT 7440-21-3, Silicon, uses **7440-31-5**, Tin, uses 7440-66-6, Zinc, uses
RL: DEV (Device component use); USES (Uses)
(core; solid soln. or intermetallic compd. composite **particles** contg. ceramics as nonaq. electrolyte secondary **battery anodes**)

L41 ANSWER 48 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:377216 HCAPLUS
DOCUMENT NUMBER: 134:369430
TITLE: Secondary nonaqueous electrolyte batteries
INVENTOR(S): Kajiura, Hisashi; Yamaura, Kiyoshi
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001143761 | A2 | 20010525 | JP 1999-325938 | 199911 16 |

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PRIORITY APPLN. INFO.: JP 1999-325938
199911
16
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AB The batteries use Li intercalating cathodes and anodes, where the anode active mass contains a Li alloying metal Sn and a Li non-alloying metal Co.

IT **12297-65-3 12394-61-5**
RL: DEV (Device component use); USES (Uses)
(lithium intercalating cobalt tin compds. for **anodes** in secondary lithium **batteries**)

RN 12297-65-3 HCAPLUS
CN Cobalt, compd. with tin (1:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 12394-61-5 HCAPLUS
CN Cobalt, compd. with tin (1:2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

IC ICM H01M010-40
ICS C22C013-00; H01M004-02; H01M004-38

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 7439-93-2, Lithium, uses **12297-65-3 12394-61-5**
RL: DEV (Device component use); USES (Uses)
(lithium intercalating cobalt tin compds. for **anodes** in secondary lithium **batteries**)

L41 ANSWER 49 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:361791 HCAPLUS
DOCUMENT NUMBER: 135:109649
TITLE: Flake Cu-Sn alloys as negative electrode materials for rechargeable lithium batteries
AUTHOR(S): Xia, Yongyao; Sakai, Tetsuo; Fujieda, Takuya; Wada, Masashi; Yoshinaga, Hiroshi
CORPORATE SOURCE: Battery Section, Osaka National Research Institute, Osaka, 563-8577, Japan
SOURCE: Journal of the Electrochemical Society ( **2001**), 148(5), A471-A481
CODEN: JESOAN; ISSN: 0013-4651
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB We have prepd. the intermetallic compd. Cu6Sn5 using mech.-alloying, gas-atomizing, and melt-spinning techniques. The electrochem. performance of the compd. is critically dependent on its morphol. due to different prepn. methods. The Cu6Sn5 alloy created by mech. alloying, consisting of <1 μm thick flake powder, has the best battery performance of all compds. It delivers a rechargeable capacity of 200 mAh/g (2000 Ah/L) over 50 cycles when the cycled voltage range is restricted to 0.2-1.5 V. The effect of the mech.-alloying time and Cu/Sn ratio on its battery performance was further investigated. The presence of excess Cu in alloy, relative to Cu6Sn5, showed improved cyclability at the expense of capacity, whereas an excess of Sn resulted in poor cyclability. A lithium-ion cell based on a flaked Cu-Sn microcomposite alloy neg. electrode and

a 5 V LiNixMn2-xO4 pos. electrode was assembled. The cell showed an av. working voltage at 4.0 V and cycled well with a reversible capacity of ca. 200 mAh/g based on the pure Cu-Sn alloy when a cell was cycled between 3.5 and 4.6 V.

IT **12682-92-7**
RL: DEV (Device component use); USES (Uses)
(flake Cu-Sn alloys as **anode** materials for rechargeable lithium **batteries**)

RN 12682-92-7 HCAPLUS
CN Copper alloy, base, Cu 70,Sn 30 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Cu | 70 | 7440-50-8 |
| Sn | 30 | 7440-31-5 |

IT **12019-69-1P 12054-11-4P**, CuSn **12668-36-9P**
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(flake Cu-Sn alloys as **anode** materials for rechargeable lithium **batteries**)

RN 12019-69-1 HCAPLUS
CN Copper, compd. with tin (6:5) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 6 | 7440-50-8 |
| Sn | 5 | 7440-31-5 |

RN 12054-11-4 HCAPLUS
CN Copper, compd. with tin (1:1) (8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 1 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

RN 12668-36-9 HCAPLUS
CN Copper alloy, nonbase, Cu,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Cu | 7440-50-8 |
| Sn | 7440-31-5 |

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56

IT Battery anodes
Mechanical alloying
**Particle** size
Surface area
(flake Cu-Sn alloys as anode materials for rechargeable lithium batteries)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate **12682-92-7** 21324-40-3, Lithium hexafluorophosphate 162684-16-4, Lithium manganese nickel oxide 330580-30-8, Lithium manganese nickel oxide LiMn1.55Ni0.45O4
RL: DEV (Device component use); USES (Uses)
(flake Cu-Sn alloys as **anode** materials for rechargeable lithium **batteries**)

IT **12019-69-1P 12054-11-4P**, CuSn **12668-36-9P**
RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)
(flake Cu-Sn alloys as **anode** materials for rechargeable lithium **batteries**)
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 50 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:261437 HCAPLUS
DOCUMENT NUMBER: 134:283272
TITLE: Secondary nonaqueous electrolyte battery using coated alloy composite particles in anode
INVENTOR(S): Nitta, Yoshiaki; Yoshizawa, Hiroshi; Shimamura, Harunari
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001102052 | A2 | 20010413 | JP 1999-281309 | 19991001 |

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PRIORITY APPLN. INFO.: JP 1999-281309 19991001

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AB The battery has the anode using the composite particles consisting of solid phase A as cores and solid phase B as coatings on all or partial surface of the cores, wherein the particles are coated with low-m.p. alloys contg. Ga and In, Sn, and/or Zn. The solid phase A contains Si, Sn, and/or Zn. The solid phase B contains solid solns. or intermetallic compds. of the phase A elements with Group 2, transition, 12, 13, and 14 (excluding C) elements. The low-m.p. alloy coatings prevent formation of high-resistivity coatings on the composite particles and decrease of conductive network, so that the battery has high capacity, good cycle performance, and high-rate discharge performance.
IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(phase component in **particles**; coated alloy composite **particles** in **anode** for high capacity, cycle, and discharge performance of nonaq. **battery**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-38
ICS H01M004-02; H01M010-40; B22F001-02; B22F005-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT 1313-08-2 7440-21-3, Silicon, uses **7440-31-5**, Tin, uses 7440-66-6, Zinc, uses 11109-57-2 11110-87-5 11124-13-3 11125-88-5 11133-86-1 11143-56-9 11149-84-1 12017-12-8, Cobalt silicide (CoSi2) 12023-01-7 12057-70-4 12201-89-7, Nickel silicide (NiSi2) 12211-23-3 22831-39-6, Magnesium

silicide (Mg2Si) 51844-78-1 55350-61-3 74946-92-2 96755-45-2
144692-49-9
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(phase component in **particles**; coated alloy composite **particles** in **anode** for high capacity, cycle, and discharge performance of nonaq. **battery**)

L41 ANSWER 51 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:167734 HCAPLUS
DOCUMENT NUMBER: 134:210504
TITLE: Anodes for nonaqueous electrolyte rechargeable batteries
INVENTOR(S): Nakagiri, Yasushi; Sato, Toshitada; Takezawa, Hideharu; Matsuda, Hiromu
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| EP 1081777 | A2 | 20010307 | EP 2000-118684 | 20000829 <-- |
| EP 1081777 | A3 | 20040714 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| JP 2001068096 | A2 | 20010316 | JP 1999-244060 | 19990830 <-- |
| US 6558841 | B1 | 20030506 | US 2000-649581 | 20000829 <-- |
| CN 1291800 | A | 20010418 | CN 2000-126985 | 20000830 <-- |
| PRIORITY APPLN. INFO.: | | | JP 1999-244060 A | 19990830 <-- |

AB The purpose of the present invention is to provide a neg. electrode for nonaq. electrolyte rechargeable batteries whose capacity is high and whose decrease of the discharging capacity through the cycles is low by improving the electron cond. of the surfaces of the active material particle for the neg. electrode. In order to achieve this purpose, an active material in the form of a composite particle comprising a phase that can store a lithium ion and includes at least Sn and a phase that cannot store a lithium ion and an electronically conductive material coating part of or the entire surfaces of the above described particle, is used for the neg. electrode in the present invention.
IT **12394-61-5**
RL: DEV (Device component use); USES (Uses)
(**anodes** for nonaq. electrolyte rechargeable **batteries**)
RN 12394-61-5 HCAPLUS
CN Cobalt, compd. with tin (1:2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

IC ICM H01M004-48
ICS H01M004-62
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 1313-08-2 7439-95-4, Magnesium, uses 7782-42-5, Graphite, uses **12394-61-5** 12509-20-5 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(**anodes** for nonaq. electrolyte rechargeable **batteries**)

L41 ANSWER 52 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:31783 HCAPLUS
DOCUMENT NUMBER: 134:103240
TITLE: Secondary nonaqueous electrolyte batteries
INVENTOR(S): Sato, Toshitada; Takezawa, Hideharu; Bito, Yasuhiko; Matsuda, Hiromu; Toyoguchi, Yoshinori
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2001003210 | A1 | 20010111 | WO 2000-JP4283 | 200006 28 |
| | | | <-- | |
| W: CN, JP, KR, US | | | | |
| RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| EP 1122802 | A1 | 20010808 | EP 2000-942392 | 200006 28 |
| | | | <-- | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| US 6544687 | B1 | 20030408 | US 2001-786450 | 200103 01 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 1999-188133 A | 199907 01 |
| | | | <-- | |
| | | | WO 2000-JP4283 W | 200006 28 |
| | | | <-- | |

AB The batteries use solid solns. LixMyM' (M = Ti, Zr, Mn, Co, Ni, Cu, and/or Fe; M' = Si and/or Sn; x <10; 0.1 ≤y ≤10) as anode active mass.
IT **12297-65-3 55071-50-6 75349-09-6**
RL: DEV (Device component use); USES (Uses)

(metal solid solns. for **anodes** in secondary lithium **batteries**)

RN 12297-65-3 HCAPLUS
CN Cobalt, compd. with tin (1:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 55071-50-6 HCAPLUS
CN Cobalt, compd. with tin (2:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 2 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 75349-09-6 HCAPLUS
CN Cobalt, compd. with tin (3:1) (7CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 3 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

IC ICM H01M004-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 12017-11-7, Cobalt silicide (CoSi) 12019-61-3 12022-95-6, Iron silicide (FeSi) 12023-00-6 12023-01-7 12023-54-0, Iron silicide (Fe3Si) 12023-56-2 12032-85-8, Manganese silicide (MnSi) 12032-86-9, Manganese silicide (MnSi2) 12032-87-0 12033-06-6 12035-57-3, NiSi 12039-70-2, Titanium silicide (TiSi) 12039-71-3, Titanium silicide (Ti3Si) 12054-11-4, CuSn 12059-11-9 12059-14-2, Nickel silicide (Ni2Si) 12059-23-3 12134-03-1, Cobalt silicide (Co2Si) 12134-36-0, Copper silicide (Cu3Si) 12136-73-1, Manganese silicide (Mn2Si) 12138-26-0, Zirconium silicide (ZrSi) 12138-32-8 12163-59-6, Manganese silicide (Mn3Si) 12166-59-5, SnTi3 12201-89-7, Nickel silicide (NiSi2) 12211-03-9, Zirconium silicide (Zr2Si) **12297-65-3** 12339-84-3 12343-95-2, Iron silicide (Fe2Si) 12410-47-8, Cobalt silicide (Co3Si) 12510-35-9, SnTi2 12645-12-4, Copper silicide (CuSi) 12725-82-5 12763-92-7 52935-15-6 54723-87-4, Iron silicide (Fe5Si2) **55071-50-6** 63780-97-2 **75349-09-6** 77137-25-8, Titanium silicide (Ti2Si) 162783-54-2, Copper silicide (Cu2Si) 210885-32-8 318515-48-9 318515-49-0, Iron silicide (Fe2.3Si)
RL: DEV (Device component use); USES (Uses)
(metal solid solns. for **anodes** in secondary lithium **batteries**)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 53 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:783246 HCAPLUS
DOCUMENT NUMBER: 133:311844
TITLE: Electrode materials having carbon particles with nano-sized inclusions therewithin and an associated electrolytic and fabrication process
INVENTOR(S): Fauteux, Denis G.; Shi, Jie; Krawiec, Wlodek T.
PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: U.S., 12 pp., Cont.-in-part of U.S. 5,965,297.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| US 6143448 | A | 20001107 | US 1999-292241 <-- | 19990415 |
| US 5965297 | A | 19991012 | US 1997-954144 <-- | 19971020 |
| JP 2000331672 | A2 | 20001130 | JP 1999-111102 <-- | 19990419 |

PRIORITY APPLN. INFO.:
US 1997-954144 A2 19971020 <--
US 1999-292241 A 19990415 <--

AB An electrode for use in an electrolytic cell and an assocd. process, wherein the electrode includes a current collecting substrate, an electrode active material having at least one component including inclusions no greater than one micron within a carbon particle. The carbon particle has a di-Bu phthalate (DBP) absorption rate preferably within a range of approx. 52 mL/100 g to approx. 400 mL/100 g.

IT **7440-31-5**, Tin, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified);
USES (Uses)
(in manuf. of **anodes** from carbon **particles** contg. mixed nano metal **particles** for **batteries**)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-02
INCL 429231800
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

IT 7440-22-4, Silver, uses **7440-31-5**, Tin, uses 7440-36-0, Antimony, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 11125-88-5
RL: MOA (Modifier or additive use); NUU (Other use, unclassified);
USES (Uses)
(in manuf. of **anodes** from carbon **particles** contg. mixed nano metal **particles** for **batteries**)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 54 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:474460 HCAPLUS
DOCUMENT NUMBER: 133:91966
TITLE: Secondary alkaline batteries with hydrogen-absorbing alloy anodes containing manganese particles
INVENTOR(S): Hatanaka, Chizuru; Irie, Shuichiro; Hosobuchi, Kaoru
PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2000195509 | A2 | 20000714 | JP 1998-366815 | 199812 24 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 1998-366815 | 199812 24 |
| | | | <-- | |

AB The batteries are equipped with anodes contg. 100 parts H-absorbing alloy powder represented as Ln1-xMgx(Ni1-yTy)z (Ln is selected from lanthanoid, Ca, Sr, Sc, Y, Ti, Zr, and/or Hf; T is selected from Li, V, Nb, Ta, Cr, Mo, Mn, Fe, Co, Al, Ga, Zn, Sn, In, Cu, Si, P, and/or B; $0 < x < 1$; $0 \leq y \leq 0.5$; and $2.5 \leq z \leq 4.5$) and 0.1-5 parts Mn-based particles. The H-absorbing alloy does not have CaCu5-type structure and shows satn. magnetization by ferromagnetic surface component 0.1-9.0 emu/m2 after immersion in 8N aq. KOH soln. at 60° for 48 h. The batteries show good short-circuit prevention, high capacity, and long cycle life.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(H-absorbing alloys contg.; **anodes** contg. hydrogen-absorbing alloy powder having ferromagnetic surfaces and manganese **particles** for **batteries**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-24
ICS C22C019-00; H01M004-38; H01M004-62; H01M010-24
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT 7439-89-6, Iron, uses 7439-93-2, Lithium, uses 7439-98-7, Molybdenum, uses 7440-03-1, Niobium, uses 7440-20-2, Scandium, uses 7440-21-3, Silicon, uses 7440-24-6, Strontium, uses 7440-25-7, Tantalum, uses **7440-31-5**, Tin, uses 7440-32-6, Titanium, uses 7440-42-8, Boron, uses 7440-50-8, Copper, uses 7440-55-3, Gallium, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses 7723-14-0, Phosphorus, uses
RL: DEV (Device component use); USES (Uses)
(H-absorbing alloys contg.; **anodes** contg.

hydrogen-absorbing alloy powder having ferromagnetic surfaces and manganese **particles** for **batteries**)

L41 ANSWER 55 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:394428 HCAPLUS
DOCUMENT NUMBER: 133:46081
TITLE: Particles vs fibers as anode for lithium ion batteries: effect of heat-treatment and additives
AUTHOR(S): Nadeau, Gabrielle; Song, Xiang Yun; Masse, Monique; Guerfi, Abdelbast; Kinoshita, Kimio; Zaghib, Karim
CORPORATE SOURCE: Institut de Recherche d'Hydro-Quebec, Varennes, QC, J3X 1S1, Can.
SOURCE: Proceedings - Electrochemical Society ( **2000**), 99-24(Intercalation Compounds for Battery Materials), 326-343
CODEN: PESODO; ISSN: 0161-6374
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Carbon fiber (CF) and mesocarbon microbead (MCMB) precursors were heat treated at 700 to 2800°C, and the electrochem. and phys. properties of the carbons were investigated. These carbons are quite different from natural graphite, which has a well-ordered layer planes where intercalation occur and two distinct surface sites, i.e., basal and edge plane sites. In the case of the fibers, intercalation occur by a single plane (circular area) or by two planes, the circular area and the cylindrical edge. For mesocarbon microbeads (MCMB), because of its sphere-like structure, this type of carbon is able to intercalate lithium ions more uniformly (i.e., 360°). The effect of additives (B, Ag, Sn) in the two carbon samples (CF and MCMB) on the electrochem. performance was also investigated.
IT **7440-31-5**, Tin, biological studies
RL: ADV (Adverse effect, including toxicity); BIOL (Biological study)
(**anode** doped with; **particles** vs fibers as **anode** for lithium ion **batteries**: effect of heat-treatment and additives)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 72
IT 7440-22-4, Silver, biological studies **7440-31-5**, Tin, biological studies 7440-42-8, Boron, biological studies
RL: ADV (Adverse effect, including toxicity); BIOL (Biological study)
(**anode** doped with; **particles** vs fibers as **anode** for lithium ion **batteries**: effect of heat-treatment and additives)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 56 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:290702 HCAPLUS
DOCUMENT NUMBER: 132:296132
TITLE: Process for preparation of nanostructure alloy anodes for lithium batteries

INVENTOR(S): Peled, Emanuel; Ulus, Avi
PATENT ASSIGNEE(S): Ramot University Authority for Applied Research and Industrial Development L, Israel
SOURCE: Eur. Pat. Appl., 17 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| EP 997543 | A1 | 20000503 | EP 1999-120914 | 19991029 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| IL 126807 | A1 | 20010826 | IL 1998-126807 | 19981029 |

PRIORITY APPLN. INFO.: IL 1998-126807 A 19981029

AB An anode structure comprises metal alloys in the form of nanoparticles, where the **particle** size is 20-500 nm, and the nanoparticles are bound together. The nanoparticles are bound together by being plated on a support. The alloys contain Sn and/or Zn as the main component.

IT **61030-02-2**
RL: DEV (Device component use); USES (Uses)
(process for prepn. of nanostructure alloy **anodes** for lithium **batteries**)

RN 61030-02-2 HCAPLUS
CN Tin alloy, base, Sn,Cu (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Sn | 7440-31-5 |
| Cu | 7440-50-8 |

IC ICM C22C001-04
ICS B22F001-00; H01M004-38; H01M004-02; H01M004-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56, 72
IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8 108-32-7, Propylene carbonate 109-99-9, uses 110-71-4 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7439-93-2D, Lithium, polyethylene oxide complex, uses 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium manganese oxide limn2o4 12190-79-3, Cobalt lithium oxide colio2 12621-65-7 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24991-55-7, Polyethylene glycol dimethyl ether 25322-68-3D, Peo, lithium complex 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 39398-44-2 53805-01-9 55326-82-4, Lithium titanium sulfide litis2 **61030-02-2** 73235-25-3 90076-65-6 101994-65-4, Copper, nickel, tin, zinc 129209-06-9, Lithium vanadium oxide li3v2o5 264266-20-8
RL: DEV (Device component use); USES (Uses)
(process for prepn. of nanostructure alloy **anodes** for lithium **batteries**)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 57 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:278210 HCAPLUS
DOCUMENT NUMBER: 132:281689
TITLE: Secondary nonaqueous electrolyte batteries
INVENTOR(S): Bito, Yasuhiko; Sato, Toshitada; Matsuda, Hiromu; Toyoguchi, Yoshinori; Nakagiri, Yasushi; Takezawa, Hideharu
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2000024070 | A1 | 20000427 | WO 1999-JP5805 | 19991020 |
| | | | <-- | |
| W: US | | | | |
| RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| JP 2000133260 | A2 | 20000512 | JP 1998-300547 | 19981022 |
| | | | <-- | |
| JP 2000133261 | A2 | 20000512 | JP 1998-302466 | 19981023 |
| | | | <-- | |
| JP 2001068112 | A2 | 20010316 | JP 1999-244061 | 19990830 |
| | | | <-- | |
| JP 2001076719 | A2 | 20010323 | JP 1999-246273 | 19990831 |
| | | | <-- | |
| JP 2001093524 | A2 | 20010406 | JP 1999-270703 | 19990924 |
| | | | <-- | |
| EP 1043789 | A1 | 20001011 | EP 1999-949336 | 19991020 |
| | | | <-- | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| US 6265111 | B1 | 20010724 | US 2000-598206 | 20000621 |
| | | | <-- | |

PRIORITY APPLN. INFO.: JP 1998-300547 A 19981022
<--
JP 1998-302466 A 19981023

<--
JP 1999-244061 A
199908
30
<--
JP 1999-246273 A
199908
31
<--
JP 1999-270703 A
199909
24
<--
WO 1999-JP5805 W
199910
20
<--

AB The batteries use anodes contg. LixMaM' (M = Ti, Zr, V, Sr, Ba, Y, La, Cr, Mo, W, Mn, Co, Ir, Ni, Cu and/or Fe; M' = Mg, Ca, Al, In, Si, Sn, Pb, Sb, and/or Bi; M ≠M'; x ≤10; 0.1 ≤a ≤10)alloy **particles** that contain ≥2 phases. The 2 phases are McM' with 0.25 ≤c ≤3 and MdM' with 1 ≤d ≤10 and c <d.

IT **12019-61-3 12019-69-1 12054-11-4 12297-65-3 12394-61-5 12629-48-0 39445-33-5**
RL: DEV (Device component use); USES (Uses)
(compns. of multiphase lithium intercalating alloys for **anodes** in secondary lithium **batteries**)

RN 12019-61-3 HCAPLUS
CN Copper, compd. with tin (3:1) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 3 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

RN 12019-69-1 HCAPLUS
CN Copper, compd. with tin (6:5) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 6 | 7440-50-8 |
| Sn | 5 | 7440-31-5 |

RN 12054-11-4 HCAPLUS
CN Copper, compd. with tin (1:1) (8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 1 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

RN 12297-65-3 HCAPLUS
CN Cobalt, compd. with tin (1:1) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 1 | 7440-31-5 |

RN 12394-61-5 HCAPLUS

CN Cobalt, compd. with tin (1:2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Co | 1 | 7440-48-4 |
| Sn | 2 | 7440-31-5 |

RN 12629-48-0 HCAPLUS
CN Copper, compd. with tin (3:2) (9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 3 | 7440-50-8 |
| Sn | 2 | 7440-31-5 |

RN 39445-33-5 HCAPLUS
CN Copper, compd. with tin (4:1) (6CI, 9CI) (CA INDEX NAME)

| Component | Ratio | Component Registry Number |
|---|---|---|
| Cu | 4 | 7440-50-8 |
| Sn | 1 | 7440-31-5 |

IC ICM H01M004-40
ICS H01M004-02; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 1310-52-7 1313-08-2 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 7440-33-7, Tungsten, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-62-2, Vanadium, uses 11130-80-6 12003-14-4 12003-21-3 12003-42-8 12003-64-4 12003-70-2 12003-96-2 12004-15-8 12004-32-9 12004-58-9 12004-62-5 12004-78-3 12009-35-7, Barium silicide (BaSi) 12017-11-7, Cobalt silicide (CoSi) 12017-12-8, Cobalt silicide (CoSi2) **12019-61-3 12019-69-1**
12022-95-6, Iron silicide (FeSi) 12022-99-0, Iron silicide (FeSi2) 12023-00-6 12023-54-0, Iron silicide (Fe3Si) 12023-56-2 12023-77-7, Iron silicide (Fe5Si3) 12032-85-8, Manganese silicide (MnSi) 12032-86-9, Manganese silicide (MnSi2) 12032-87-0 12033-06-6 12033-10-2, Manganese silicide (Mn5Si3) 12033-37-3, Molybdenum silicide (Mo3Si) 12035-57-3, Nickel silicide (NiSi) 12039-70-2, Titanium silicide (TiSi) 12039-75-7, Vanadium silicide (VSi) 12039-76-8, Vanadium silicide (V3Si) 12039-83-7, Titanium silicide (TiSi2) 12039-87-1, Vanadium silicide (VSi2) 12039-90-6, Zirconium silicide (ZrSi2) 12042-17-0 **12054-11-4** 12059-11-9 12059-14-2, Nickel silicide (Ni2Si) 12059-23-3 12059-24-4 12067-57-1, Titanium silicide (Ti5Si3) 12136-73-1, Manganese silicide (Mn2Si) 12138-25-9, Vanadium silicide (V2Si) 12138-26-0, Zirconium silicide (ZrSi) 12138-32-8 12163-59-6, Manganese silicide (Mn3Si) 12166-59-5 12166-60-8 12166-63-1 12201-89-7, Nickel silicide (NiSi2) 12202-01-6 12252-30-1 12253-13-3 12253-45-1 **12297-65-3** 12339-84-3 12343-95-2, Iron silicide (Fe2Si) **12394-61-5** 12396-85-9, Nickel silicide (Ni3Si2) 12410-47-8, Cobalt silicide (Co3Si) 12413-12-6 12510-35-9 **12629-48-0** 12725-82-5 12763-92-7 39438-57-8, Iron silicide (Fe3Si2) **39445-33-5** 54065-12-2 60874-28-4, Iron molybdenum silicide (FeMoSi) 77137-25-8, Titanium silicide (Ti2Si) 78983-55-8 86116-27-0 91607-16-8 93508-85-1 141616-89-9 210885-32-8 264124-69-8 264124-70-1 264124-71-2 264124-72-3 264124-74-5 264124-75-6 264124-76-7 264124-77-8 264124-79-0 264124-80-3 264124-81-4

264124-82-5 264124-90-5, Zirconium silicide (Zr0.8Si)
264124-96-1, Vanadium silicide (V3Si2) 264125-08-8, Cobalt
silicide (Co3Si2) 264125-13-5, Barium titanium silicide (BaTi2Si2)
264125-17-9 264125-18-0
RL: DEV (Device component use); USES (Uses)
(compns. of multiphase lithium intercalating alloys for
**anodes** in secondary lithium **batteries**)
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L41 ANSWER 58 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:254760 HCAPLUS
DOCUMENT NUMBER: 132:267596
TITLE: Secondary lithium batteries with improved anodes
using carbon-graphite mixture
INVENTOR(S): Takeuchi, Seiji; Honbo, Hidetoshi; Kaneda,
Junya; Muranaka, Kiyoshi
PATENT ASSIGNEE(S): Hitachi, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2000113877 | A2 | 20000421 | JP 1998-285449 | 19981007 |
| JP 3055892 | B2 | 20000626 | | |

PRIORITY APPLN. INFO.: JP 1998-285449 19981007

AB The batteries use anodes contg. (1) conductor aids of C particles supporting metals which form alloys with Li and (2) intercalatable graphite, and the size of the C particle is smaller than that of the graphite. The batteries have improved electrocond. for charge-discharge reaction rate, discharge capacity for output d., cycle performance, and heat emission and use decreased amt. of high-cost metals for supporting.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(Li **battery anodes** using metal-supporting
carbon **particle**-intercalatable graphite mixt. for
discharge capacity and cycle performance)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-02
ICS H01M004-58; H01M004-62; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7429-90-5, Aluminum, uses 7439-88-5, Iridium, uses 7439-92-1, Lead, uses 7439-97-6, Mercury, uses 7440-05-3, Palladium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-24-6, Strontium, uses 7440-28-0, Thallium, uses **7440-31-5**, Tin, uses 7440-36-0, Antimony, uses 7440-39-3, Barium, uses

7440-42-8, Boron, uses 7440-43-9, Cadmium, uses 7440-44-0, Carbon, uses 7440-55-3, Gallium, uses 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses 7782-42-5, Graphite, uses 13494-80-9, Tellurium, uses
RL: DEV (Device component use); USES (Uses)
(Li **battery anodes** using metal-supporting carbon **particle**-intercalatable graphite mixt. for discharge capacity and cycle performance)

L41 ANSWER 59 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:205858 HCAPLUS
DOCUMENT NUMBER: 132:224827
TITLE: Carbonaceous material coated anode materials for secondary lithium batteries
INVENTOR(S): Sato, Shuji; Fuse, Akira; Ishihara, Masashi
PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2000090916 | A2 | 20000331 | JP 1998-256562 | 199809 10 <-- |

PRIORITY APPLN. INFO.: JP 1998-256562 199809 10 <--

AB The anode materials are carbonaceous material coated Li intercalating metal particles, obtained by heat treating a mixt. of precursors of the metal and the carbonaceous material, and contain 5-85% of the metal. The metal precursor is selected from oxides, sulfides, nitrides, selenides, tellurides, nitrates, sulfates, compds. of Group IA elements, IIA elements, Ti, V, Ta, Group VIA elements, Mn, Group VIII elements, Group IB elements, Group IIB elements, Group IIIB elements, Group IVB elements, As, Sb, and Bi and their mixts. and is agglomerated secondary particles having av. diam. ≤10 μm of primary particles having av. diam. ≤500 nm. The carbonaceous material formed from the heat treatment has interplanar spacing d002 ≥3.38Å and Lc ≤100 Å.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(carbonaceous material coated metal **particles** for **anodes** in secondary lithium **batteries**)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-02
ICS H01M004-04; H01M004-58; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT **7440-31-5**, Tin, uses 71513-06-9 211364-72-6
RL: DEV (Device component use); USES (Uses)
(carbonaceous material coated metal **particles** for **anodes** in secondary lithium **batteries**)

L41 ANSWER 60 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:572133 HCAPLUS
DOCUMENT NUMBER: 131:172716
TITLE: Electrodes, secondary batteries, and their manufacture
INVENTOR(S): Kawakami, Soichiro; Asao, Masaya; Kobayashi, Naoya; Kosuzu, Takeshi; Kimura, Hironao
PATENT ASSIGNEE(S): Canon K. K., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 50 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 11242954 | A2 | 19990907 | JP 1998-30642 | 19980128 |
| JP 3619000 | B2 | 20050209 | | |
| CA 2228095 | AA | 19980728 | CA 1998-2228095 | 19980128 |
| CA 2228095 | C | 20020108 | | |
| US 6432585 | B1 | 20020813 | US 1998-14408 | 19980128 |
| JP 2005044814 | A2 | 20050217 | JP 2004-290296 | 20041001 |

PRIORITY APPLN. INFO.: JP 1997-13942 A 19970128
JP 1997-369371 A 19971227
JP 1998-30642 A3 19980128

AB The electrodes have a collector plate and active mass layers, contg. ≥35% main component having av. particle diam. 0.5-60 μm, covering both sides of the collector. The active mass layer may have 10-86% porosity, the collector may have protrusions on their surface, and the main component contains Si, Ge, Sn, Pb, In, Mg, and/or Zn. The batteries are secondary batteries using the above electrodes as anodes. The electrodes and the secondary batteries using the anodes are prepd. by forming the active mass layer on the collector, e.g., by painting or plating.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(compns. and structure and manuf. of **anodes** with controlled active mass **particle** diams. for **batteries**)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-02
ICS H01M004-02; H01M004-04; H01M004-38; H01M004-58; H01M004-62; H01M004-66; H01M004-70; H01M010-24; H01M010-40; H01M012-08
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 1313-99-1, Nickel oxide (NiO), uses 1314-13-2, Zinc oxide, uses 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-21-3, Silicon, uses **7440-31-5**, Tin, uses 7440-44-0, Carbon, uses 7440-50-8, Copper, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses 7782-42-5, Graphite, uses 9002-84-0 24937-79-9 25232-41-1, Poly(4-vinylpyridine) 37233-35-5 50926-11-9, Ito 145225-67-8 187674-56-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(compns. and structure and manuf. of **anodes** with controlled active mass **particle** diams. for **batteries**)

L41 ANSWER 61 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:451119 HCAPLUS
DOCUMENT NUMBER: 131:90247
TITLE: battery electrodes having carbon **particles** containing mixed nano-size additives, the batteries, their manufacture, and electrolysis method for the manufacture
INVENTOR(S): Foto, Dennis G.; Ci, G.; Krawiec, Urodec
PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 11195413 | A2 | 19990721 | JP 1998-298303 | 19981020 |
| US 5965297 | A | 19991012 | US 1997-954144 | 19971020 |
| PRIORITY APPLN. INFO.: | | | US 1997-954144 A | 19971020 |

AB The electrodes have a collector, an active mass contg. ≤1 μm additive **particles** mixed with C **particles**, and a means preventing losing of elec. contact of the additive **particles** caused by their mech. deformation. The additive is selected from Sn, Cu, Sb, Zn, Ag, Au, their mixts., and their alloys; and the additive **particles** have diam. 1 nm to 1 μm. The batteries have cathodes and/or anode having the above structure and are prepd. by applying the active mass on electrode substrates to form an electrode, attaching an electrolyte to the electrode, and connecting the other electrode to the electrolyte. Batteries using anode having the above structure are electrolyzed by charging the batteries to add metal ions to the additive in the C

**particles**, while retaining the continuity of the C **particles** during and after the addn. of the metal ions, to contact the additives with the C **particles**, and to elec. join the C **particles**.

IT **7440-31-5**, Tin, uses **229640-65-7**
RL: MOA (Modifier or additive use); USES (Uses)
(structure and manuf. of **anodes** from carbon **particles** contg. mixed nano metal **particles** for **batteries**)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

RN 229640-65-7 HCAPLUS
CN Tin alloy, base, Sn 91,Cu 9 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 91 | 7440-31-5 |
| Cu | 9 | 7440-50-8 |

IC ICM H01M004-02
ICS H01M004-04; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST battery electrode carbon nano metal **particle** manuf; carbon battery anode nano metal **particle**
IT Phenolic resins, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in manuf. of anodes from carbon **particles** contg. mixed nano metal **particles** for batteries)
IT Battery anodes
(structure and manuf. of anodes from carbon **particles** contg. mixed nano metal **particles** for batteries)
IT Carbonaceous materials (technological products)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(structure and manuf. of anodes from carbon **particles** contg. mixed nano metal **particles** for batteries)
IT 7440-22-4, Silver, uses **7440-31-5**, Tin, uses 7440-36-0, Antimony, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-66-6, Zinc, uses 11107-72-5 206443-56-3 **229640-65-7**
RL: MOA (Modifier or additive use); USES (Uses)
(structure and manuf. of **anodes** from carbon **particles** contg. mixed nano metal **particles** for **batteries**)
IT 7782-42-5, Graphite, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(structure and manuf. of anodes from carbon **particles** contg. mixed nano metal **particles** for batteries)

L41 ANSWER 62 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:322621 HCAPLUS
DOCUMENT NUMBER: 130:340688
TITLE: Anode materials for nonaqueous secondary batteries, their manufacture, and nonaqueous secondary batteries
INVENTOR(S): Akagi, Ryuichi; Suzuki, Atsushi; Kajiura, Yoshio
PATENT ASSIGNEE(S): Kao Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent

LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 11135120 | A2 | 19990521 | JP 1997-293896 | 19971027 |

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PRIORITY APPLN. INFO.: JP 1997-293896 19971027

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AB The anode materials comprise composite particles of carbonaceous materials and Li-intercalating elements or compds. of ≥1 of Group IIIA elements, Group IVA elements excluding Si, and Group VA elements. Powders of Li-intercalating elements or compds. are mixed with resins that are carbonizable by heating, heated at 400-1200° under nonoxidizing atm., and mech. crushed to give composite particles for anode materials. Secondary batteries comprising the anodes, transition metal oxide cathodes, and Li ion-conducting nonaq. electrolytes comprising org. solvents contg. Li compds., polymers contg Li compds., or polymers carrying org. solns. of Li compds. are also claimed. Batteries having excellent charge-discharge cycles, high voltage, and high capacity are obtained.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon-metal composite **particles** as **anodes** for nonaq. secondary **batteries**)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-58
ICS H01M004-02; H01M004-04; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7429-90-5, Aluminum, uses **7440-31-5**, Tin, uses 7440-69-9, Bismuth, uses 9016-83-5, Cresol-formaldehyde copolymer
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(carbon-metal composite **particles** as **anodes** for nonaq. secondary **batteries**)

L41 ANSWER 63 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1998:811831 HCAPLUS
DOCUMENT NUMBER: 130:69101
TITLE: Anodes containing metal particles for secondary lithium ion batteries
INVENTOR(S): Takagi, Yoshinori; Hatano, Hitomi; Sato, Nobyuki
PATENT ASSIGNEE(S): Kawasaki Steel Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| JP 10334887 | A2 | 19981218 | JP 1997-146504 | 199706 04 <-- |

PRIORITY APPLN. INFO.: JP 1997-146504 199706 04 <--

AB The title anodes contain carbon materials or org. materials, and metal particles which have ionization equil. potential >-0.3 V. The anodes may contain 0.1-20 parts 0.05-5 μm-diam. particles of Ni, Co, Sn, and/or Pb. The carbon materials may be mesophase carbon beads. Resulting batteries have high charging-discharging capacity.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(metal **particle**-contg. **anodes** from mesophase C for secondary Li ion **battery**)

RN 7440-31-5 HCAPLUS

CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-02
ICS H01M004-58; H01M004-62

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 7439-92-1, Lead, uses 7440-02-0, Nickel, uses **7440-31-5**, Tin, uses 7440-48-4, Cobalt, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(metal **particle**-contg. **anodes** from mesophase C for secondary Li ion **battery**)

L41 ANSWER 64 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1998:804120 HCAPLUS
DOCUMENT NUMBER: 130:54847
TITLE: Anode materials for secondary nonaqueous-electrolyte batteries and batteries using these materials
INVENTOR(S): Shimamura, Harunari; Okamura, Kazuhiro; Nitta, Yoshiaki
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 25 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 7
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| EP 883199 | A1 | 19981209 | EP 1998-110110 | 199806 03 <-- |
| EP 883199 | B1 | 20030507 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| JP 2000030703 | A2 | 20000128 | JP 1998-150966 | 199806 |

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|---|---|---|---|---|---|
| | | | | | 01 |
| | | | | <-- | |
| HK 1015550 | A1 | 20030905 | HK 1999-100282 | | |
| | | | | | 199901 |
| | | | | | 21 |
| | | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 1997-144873 | A | |
| | | | | | 199706 |
| | | | | | 03 |
| | | | | <-- | |
| | | | JP 1998-123199 | A | |
| | | | | | 199805 |
| | | | | | 06 |
| | | | | <-- | |

AB The composite title materials comprise a core formed by a solid phase A, and a solid phase Q partly or entirely wrapping the core. The amt. of Li intercalation and deintercalation by the phase A resulting from the charge and discharge is higher than that by the phase Q, however, the discharge capacity decrease of the phase Q resulting from battery cycling is low. The solid phase A comprises 1 of the materials selected from Li, ≥1 of the elements which is able to alloy with Li, solid soln. including ≥1 of the above elements being able to alloy with Li, or an intermetallic compd. including ≥1 of the above elements being able to alloy with Li. The solid phase Q has a different compn., but comprises the same kind of materials except Li by itself as those of the solid phase A. It is essential that the solid phase Q is a mixed conductor having electronic as well as Li ionic cond. When these materials are used in the anode, a secondary nonaq.-electrolyte battery can be realized featuring high reliability, high cycle characteristic, a high capacity, and excellent high-rate charge and discharge characteristics.

IT **67828-86-8 78966-19-5**
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(in composite **anodes** for secondary nonaq.-electrolyte **batteries**)

RN 67828-86-8 HCAPLUS
CN Tin alloy, base, Sn 80,Co 20 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 80 | 7440-31-5 |
| Co | 20 | 7440-48-4 |

RN 78966-19-5 HCAPLUS
CN Tin alloy, base, Sn 67,Co 33 (9CI) (CA INDEX NAME)

| Component | Component Percent | Component Registry Number |
|---|---|---|
| Sn | 67 | 7440-31-5 |
| Co | 33 | 7440-48-4 |

IC ICM H01M004-40
ICS H01M004-36; H01M004-02

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 7439-98-7, Molybdenum, uses 7440-21-3, Silicon, uses 12057-22-6, LiZn 12338-02-2 12359-06-7 12372-42-8, InLi 12588-27-1
12606-83-6 12625-55-7 12635-26-6 12719-97-0 12779-78-1
37201-99-3 37254-87-8 37345-56-5 39328-55-7 42616-53-5
52359-88-3 53550-31-5 53680-56-1 54739-65-0 54966-99-3
55823-21-7 56095-13-7 57896-14-7 57952-74-6 58817-42-8
58817-44-0 60224-91-1 65467-06-3, Barium alloy, Ba 56,Al 44
66758-27-8 67661-05-6 **67828-86-8** 68714-90-9

72048-17-0 73730-53-7 73990-63-3 74662-93-4 77325-33-8
**78966-19-5** 79818-26-1 80507-64-8 81754-08-7
81876-77-9 81876-81-5 82906-17-0 85746-90-3 87646-31-9
90738-65-1 96958-82-6 100502-97-4 101406-54-6 110109-09-6
110414-25-0 110633-84-6 112787-78-7 113470-14-7 114016-83-0
117816-43-0 118035-89-5 119281-87-7 119469-25-9 122381-65-1
126034-61-5 127706-34-7 128491-68-9 128491-69-0 131082-81-0
137747-27-4 140154-87-6 142536-01-4 145604-95-1 147856-99-3
148844-98-8 155759-82-3 158140-18-2 172919-16-3 173790-72-2
198958-08-6 204000-16-8 217074-33-4 217074-37-8 217074-44-7
217074-48-1 217074-51-6 217074-53-8 217074-57-2 217074-65-2
217074-68-5 217074-71-0 217074-75-4 217075-09-7 217075-12-2
217075-19-9 217075-21-3 217075-23-5 217075-26-8 217075-28-0
217075-30-4 217075-34-8 217075-38-2 217075-39-3 217075-40-6
217075-41-7 217075-42-8 217075-43-9 217075-44-0 217075-45-1
217075-46-2 217075-47-3 217075-48-4 217075-49-5 217075-50-8
217075-51-9 217075-52-0 217075-53-1 217075-54-2 217075-55-3
217075-56-4 217075-57-5 217075-58-6 217075-59-7 217075-61-1
217075-62-2 217075-63-3 217075-64-4 217075-65-5
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(in composite **anodes** for secondary nonaq.-electrolyte **batteries**)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 65 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1998:25656 HCAPLUS
DOCUMENT NUMBER: 128:77627
TITLE: Lithium secondary batteries having high capacity and capable of rapid charging and discharging
INVENTOR(S): Takeuchi, Seiji; Honbo, Hidetoshi; Muranaka, Kiyoshi
PATENT ASSIGNEE(S): Hitachi, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 10003907 | A2 | 19980106 | JP 1996-155115 | 19960617 |
| | | | <-- | |
| JP 3188395 | B2 | 20010716 | | |
| JP 10321225 | A2 | 19981204 | JP 1997-129486 | 19970520 |
| | | | <-- | |
| US 6030726 | A | 20000229 | US 1997-866250 | 19970605 |
| | | | <-- | |
| CN 1170243 | A | 19980114 | CN 1997-112800 | 19970616 |
| | | | <-- | |
| CN 1086515 | B | 20020619 | | |
| PRIORITY APPLN. INFO.: | | | JP 1997-129486 A | 19970520 |
| | | | <-- | |

JP 1996-155115 A
199606
17

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AB Anodes in the title Li batteries contain C **particles** carrying metals (A) capable of alloying with Li and C **particles** carrying metals (B) which unable to alloy with Li. Alternatively, anodes in the batteries contain C **particles** carrying A-B alloys. Electromobiles and elec. motorcycles using motors contg. the claimed batteries are claimed. The batteries show long cycling life.

IT **7440-31-5P**, Tin, uses **12668-36-9P**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(loaded on carbon; Li secondary **batteries** using **anodes** contg. C **particles** carrying metals)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

RN 12668-36-9 HCAPLUS
CN Copper alloy, nonbase, Cu,Sn (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Cu | 7440-50-8 |
| Sn | 7440-31-5 |

IC ICM H01M004-40
ICS H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT Battery anodes
(Li secondary batteries using anodes contg. C **particles** carrying metals)

IT Electric vehicles
(Li secondary batteries using anodes contg. C **particles** carrying metals suitable for)

IT Motorcycles
(elec.; Li secondary batteries using anodes contg. C **particles** carrying metals suitable for)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(carrying metals; Li secondary batteries using anodes contg. C **particles** carrying metals)

IT 7440-02-0P, Nickel, uses 7440-22-4P, Silver, uses **7440-31-5P**, Tin, uses 7440-50-8P, Copper, uses **12668-36-9P**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(loaded on carbon; Li secondary **batteries** using **anodes** contg. C **particles** carrying metals)

L41 ANSWER 66 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1997:184167 HCAPLUS
DOCUMENT NUMBER: 126:174297
TITLE: Nickel/hydride batteries with improved anodes and their manufacture
INVENTOR(S): Tanaka, Toshiki; Nakagawa, Hiroe; Oonishi, Masuhiro; Bogauchi, Takehito; Furukawa, Kengo; Matsumura, Juichi; Oshitani, Masahiko
PATENT ASSIGNEE(S): Yuasa Battery Co., Ltd., Japan; Yuasa Corp.

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 09007585 | A2 | 19970110 | JP 1995-159244 | 19950626 |
| | | | <-- | |
| JP 3528333 | B2 | 20040517 | | |

PRIORITY APPLN. INFO.: JP 1995-159244 19950626
<--

AB The batteries use anodes contg. powd. H absorbing transition metal alloy, having higher transition metal concn. on the particle surface than in the bulk, and Group IIB, IVB, VB, VIB, VIII, IIA elements, In, Sn, and/or Sb or their compds. The batteries are manufd. by removing oxide films from the alloy particle surface while eluting rare earth elements from the surface and prepg. the anodes from the treated particles and the above mentioned elements and/or compds.. The batteries have long cycle life.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(additives in **anodes** contg. hydrogen absorbing alloy **particles** with transition metal enriched surface layers for nickel **batteries**)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-24
ICS H01M004-38; H01M010-30

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 1305-62-0, Calcium hydroxide, uses 1307-96-6, Cobalt oxide (CoO), uses 1308-38-9, Chromium oxide (Cr2O3), uses 1309-42-8, Magnesium hydroxide 1314-13-2, Zinc oxide, uses 1314-61-0, Tantalum oxide (Ta2O5) **7440-31-5**, Tin, uses 7440-33-7, Tungsten, uses 7440-36-0, Antimony, uses 7440-74-6, Indium, uses 13463-67-7, Titania, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(additives in **anodes** contg. hydrogen absorbing alloy **particles** with transition metal enriched surface layers for nickel **batteries**)

L41 ANSWER 67 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1996:700953 HCAPLUS
DOCUMENT NUMBER: 126:34284
TITLE: Small particle size multiphase Li-alloy anodes for lithium-ion-batteries
AUTHOR(S): Yang, J.; Winter, M.; Besenhard, J. O.
CORPORATE SOURCE: Institute for Chemical Technology of Inorganic Materials, Technical University of Graz,

Stremayrgasse 16/III, A-8010, Graz, Austria
SOURCE: Solid State Ionics (**1996**), 90(1-4), 281-287
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An impressive improvement of the cycling performance of Li-alloy anodes in rechargeable org. electrolyte lithium batteries can be achieved by replacing compact or large particle size metallic host matrixes M (e.g. Sn or Sb) with small particle size (micro- or nano-scale) multiphase metallic host materials like Sn/SnSbn or Sn/SnAgn. Electrochem. alloy deposition is a convenient way to prep. sub-micrometer particles of Sn and SnSbn or Sn and SnAgn. During the first lithium insertion these small particle size multiphase matrix materials are expanded to a porous material without formation of major cracks. This seems not only to be related with the small abs. changes in the size of the individual particles, but also with the fact that the more reactive particles are allowed to expand in a soft and ductile surrounding of still unreacted material.
IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(small **particle** size multiphase Li-alloy **anodes** for lithium-ion-**batteries**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
IT **7440-31-5**, Tin, uses 54611-89-1 116911-10-5
RL: DEV (Device component use); USES (Uses)
(small **particle** size multiphase Li-alloy **anodes** for lithium-ion-**batteries**)

L41 ANSWER 68 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1996:599032 HCAPLUS
DOCUMENT NUMBER: 125:226556
TITLE: Secondary lithium battery-using system and material for anode of secondary battery
INVENTOR(S): Takeuchi, Seiji; Honbo, Hidetoshi; Yamagata, Takeo; Horiba, Tatsuo; Muranaka, Yasushi
PATENT ASSIGNEE(S): Hitachi, Ltd., Japan
SOURCE: Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| EP 729194 | A2 | 19960828 | EP 1996-101409 | 19960201 |
| | | | <-- | |
| EP 729194 | A3 | 19960918 | | |
| EP 729194 | B1 | 19990602 | | |
| R: DE, FR, GB | | | | |
| JP 08273702 | A2 | 19961018 | JP 1996-17220 | |

199602
02
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|---|---|---|---|---|
| JP 3165953 | B2 | 20010514 | | |
| US 6083645 | A | 20000704 | US 1998-156387 | |
| | | | | 199809 |
| | | | | 18 |
| | | | <-- | |
| PRIORITY APPLN. INFO.: | | | JP 1995-15676 | A |
| | | | | 199502 |
| | | | | 02 |
| | | | <-- | |
| | | | US 1996-595246 | B1 |
| | | | | 199602 |
| | | | | 01 |
| | | | <-- | |

AB A secondary Li battery for use as a power source for systems such as an elec. automobile, motor bicycle or portable equipment includes an anode composed of a C material including C particles carrying fine particles of a metal which forms an alloy with Li. The C particles have the spacing of (002) planes 3.354-3.369 Å and the crystallite size in the c-axis direction >300 Å. The particle size of the metal forming an alloy with Li is ≤1000 Å. By using the charge/discharge capacity of the alloy, a value exceeding the theor. capacity 372 mA-h/g graphite can be obtained. The battery is capable of discharge with an output energy d. ≥350 W/kg.

IT **7440-31-5**, Tin, uses
RL: DEV (Device component use); USES (Uses)
(**battery anodes** from carbon **particles** contg. metal which forms alloys with lithium)

RN 7440-31-5 HCAPLUS

CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-58

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT 7440-22-4, Silver, uses **7440-31-5**, Tin, uses 7440-44-0, Carbon, uses 7440-69-9, Bismuth, uses
RL: DEV (Device component use); USES (Uses)
(**battery anodes** from carbon **particles** contg. metal which forms alloys with lithium)

L41 ANSWER 69 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN

| | |
|---|---|
| ACCESSION NUMBER: | 1995:795675 HCAPLUS |
| DOCUMENT NUMBER: | 123:175032 |
| TITLE: | Mercury free alkaline zinc batteries with improved anodes |
| INVENTOR(S): | Tsutsui, Kyohide; Izumi, Akihide; Nishio, Masatake; Nishida, Kunyoshi |
| PATENT ASSIGNEE(S): | Fuji Electrochemical Co Ltd, Japan |
| SOURCE: | Jpn. Kokai Tokkyo Koho, 3 pp. CODEN: JKXXAF |
| DOCUMENT TYPE: | Patent |
| LANGUAGE: | Japanese |
| FAMILY ACC. NUM. COUNT: | 1 |

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 07169463 | A2 | 19950704 | JP 1993-313309 | |

199312
14
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PRIORITY APPLN. INFO.: JP 1993-313309
199312
14
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AB The batteries use anodes composed of powd. Hg free microalloyed Zn contg. Pb, In, Al, Ga, Sn, Ca, Mg, Bi, Li, and/or Na, having particle size 75-450 μm, contg. ≥90% ≤300-μm particles. The batteries show large capacity at low temp. and high load discharging.
IT **7440-31-5**, Tin, uses
RL: MOA (Modifier or additive use); USES (Uses)
(microalloying element; controlled **particle** size of mercury free microalloyed zinc for **battery anodes**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-42
ICS H01M010-24
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7440-23-5, Sodium, uses **7440-31-5**, Tin, uses 7440-55-3, Gallium, uses 7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(microalloying element; controlled **particle** size of mercury free microalloyed zinc for **battery anodes**)

L41 ANSWER 70 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1992:155496 HCAPLUS
DOCUMENT NUMBER: 116:155496
TITLE: Secondary alkaline zinc batteries
INVENTOR(S): Fujiwara, Yoshiki; Ishikura, Yoshikazu
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 03272563 | A2 | 19911204 | JP 1990-71661 | 199003 20 |
| JP 2854082 | B2 | 19990203 | | |

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PRIORITY APPLN. INFO.: JP 1990-71661
199003
20
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AB The active material of the batteries contain Zn particles of ≤10 μm with ZnO-based surface layer. Preferably, ZnO particles of ≤1 μm size are added to the anodes, and In, Tl, Ga, Sn, Bi, and/or Pb are present in the surface layers as

additives, and in the particle core as alloying components. The active material particles are resistant to swelling, elution (to the electrolytes), and dendrite generation, and the batteries have excellent cycling characteristics.

IT **7440-31-5**, Tin, uses
RL: USES (Uses)
(**anodes** from zinc **particles** coated with zinc oxide and, for alk. secondary **batteries**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M004-42
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT 7439-92-1, Lead, uses 7440-28-0, Thallium, uses **7440-31-5**, Tin, uses 7440-55-3, Gallium, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses 20661-21-6, Indium hydroxide
RL: USES (Uses)
(**anodes** from zinc **particles** coated with zinc oxide and, for alk. secondary **batteries**)

L41 ANSWER 71 OF 71 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1988:196324 HCAPLUS
DOCUMENT NUMBER: 108:196324
TITLE: Method for making irregular shaped single-crystal metal particles for use in anodes for electrochemical cells
INVENTOR(S): Pa, David; Putt, Ronald A.; Black, Douglas
PATENT ASSIGNEE(S): Duracell, Inc., USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| US 4722763 | A | 19880202 | US 1986-945596 | 19861223 |
| | | | <-- | |
| GB 2198964 | A1 | 19880629 | GB 1987-19502 | 19870818 |
| | | | <-- | |
| GB 2198964 | B2 | 19901128 | | |
| BE 1000813 | A3 | 19890411 | BE 1987-942 | 19870825 |
| | | | <-- | |
| FR 2608636 | A1 | 19880624 | FR 1987-12045 | 19870828 |
| | | | <-- | |
| FR 2608636 | B1 | 19901228 | | |
| DE 3728840 | A1 | 19880707 | DE 1987-3728840 | 19870828 |
| | | | <-- | |
| JP 63166786 | A2 | 19880709 | JP 1987-221187 | |

198709
03
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JP 05066911 B4 19930922
PRIORITY APPLN. INFO.: US 1986-945596 A
198612
23
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AB The method comprises: (1) forming thin individual coatings on each of the particles, such as metal oxides on metal particles; (2) adding a combustible material to the coated particles and burning it; (3) melting the particle material within the coatings, which function as individual particle crucibles; (4) cooling the melted particles within the coatings to form individual single crystals, each within its own coating; and (5) removing the coating, such as by solvation, with a solvent or by chem. reaction. The single-crystal particles conform to the original shape of the particles, which may be irregular. Such irregularly shaped single crystals, such as of Zn, when used in electrochem. cell anodes, enable the utilization of reduced amts. of Hg for their amalgamation without significant increase in cell gassing.

IT **7440-31-5**, Tin, properties
RL: PRP (Properties)
(crystal growth of irregularly shaped **particles** of, for **battery anodes**)

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM C30B029-60
INCL 156616100
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): **52**, 72

IT 7429-90-5, Aluminum, properties 7439-92-1, Lead, properties
7439-93-2, Lithium, properties 7439-95-4, Magnesium, properties
7440-09-7, Potassium, properties 7440-17-7, Rubidium, properties
7440-23-5, Sodium, properties **7440-31-5**, Tin, properties
7440-43-9, Cadmium, properties 7440-66-6, Zinc, properties
RL: PRP (Properties)
(crystal growth of irregularly shaped **particles** of, for **battery anodes**)

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